Cattail-Kettle Lake, South Dakota
Angler Use and Harvest Surveys
December 2004 - August 2005

by

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Preface

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Executive Summary

Cattail-Kettle Lake is an important fishery in northeast South Dakota. Information concerning angler use and harvest is important in the ongoing fisheries management of the Cattail-Kettle Lake fishery. This report summarizes angler use and harvest information that was collected between December 2004 and August 2005. Previous angler use and harvest surveys were completed between December 1998 and August 2004.

Fishing pressure was minimal during the 2004-05 winter (December – March) with an estimated pressure of 429 angler hours. Fishing pressure during the 2005 summer (May – August) was estimated at 10,926 hours. Walleyes continue to be the most sought fish species by anglers fishing Cattail-Kettle Lake. Nearly all fishing during the 2005 summer took place from a boat.

South Dakota residents represented 77% of interviewed anglers during the 2004-05 winter, but only 40% of interviewed anglers during the 2005 summer were South Dakota residents. The potential economic impact on local economies during the 2004-05 winter was $8,174 and $160,430 during the 2005 summer.

Northern pike were the only fish species caught during the 2004-05 winter. Anglers caught an estimated 3,256 walleyes during the 2005 summer and harvested 1,545 walleyes. Angler catch rates for walleyes peaked at 0.39 walleyes per hour in June 2005 and dropped off in July and August. Yellow perch and northern pike were occasional additions to the angler creel during the 2005 summer. Catches of largemouth bass, black bullheads, and black crappies were rare during the 2005 summer.

Catching fish and relaxation were the two most common angler responses when asked what the most important factor was in determining a successful fishing trip. The majority of anglers were satisfied with their fishing trip during the 2004-05 winter. Anglers favored making the regulation of one walleye over 20 inches (508 mm) in the daily limit a statewide regulation, but were opposed to reducing the walleye daily limit from four to three walleyes. Greater than 60% of interviewed anglers supported the reduction in panfish daily limits from 25 to 10 fish. No consensus was obtainable on the possible reduction in northern pike daily limit from six to three fish.

Historic fishing pressure, catch and harvest rates and numbers of fish caught and harvested at Cattail-Kettle Lake can be found in the appendices of this report.

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Cattail-Kettle Lake, South Dakota
Angler Use and Harvest Surveys
December 2004 - August 2005

Cattail-Kettle Lake is an important sport fishery in northeast South Dakota. Cattail-Kettle Lake became an important fishery because of above normal precipitation during the 1990's resulted in the water level of Cattail-Kettle Lake increasing to a point that the threat of winterkill was greatly diminished. The South Dakota Department of Game, Fish and Parks (SDGFP) stocked largemouth bass fingerlings into Cattail-Kettle Lake during 1996 and walleyes were first stocked during 1997. A walleye minimum-length restriction of 406 mm (16 inches) with one walleye over 508 mm (20 inches) was enacted on January 1, 1999. Panfish (i.e., yellow perch, bluegill/sunfish, and crappie) daily limits were reduced from 25 to 10 of each species in several northeast South Dakota counties on January 1, 2002.

Information concerning angler use and harvest is important in the ongoing fisheries management of the Cattail-Kettle Lake fishery. Angler use and harvest surveys previously were completed between December 1998 and August 2004. This report summarizes angler use and harvest surveys that were completed between December 2004 and August 2005.

Study Site

Cattail-Kettle Lake is located in Marshall County, South Dakota and is approximately 1,094 ha (2,700 acres). The lake is located 8 km (5 miles) west and 4.8 km (3 miles) north of Eden, South Dakota and is adjacent to Fort Sisseton State Park. A public boat ramp is located across from Fort Sisseton State Park on the lake's west shore. Shore fishing access is primarily confined to portions of the road that runs adjacent to the western shoreline.

Methods

A roving angler use and harvest survey with two-stage stratification was completed during the 2004-05 winter (December – March) and the 2005 summer (May – August). The first stratification unit was between weekdays and weekend days and the second stratification was for the time periods that the clerk was present. Because weekends typically receive increased fishing pressure most weekend days were represented in the survey. Time periods were randomly assigned to available days with weekdays and weekend/holiday days being treated separately when times were assigned.

The survey utilized instantaneous angler counts combined with angler interviews. Instantaneous angler counts provided fishing pressure estimates and angler interviews provided information necessary for estimating fish species catch rates, mean angler trip length, and mean party size. Two instantaneous counts of the total number of boats fishing and all shoreline anglers present were made each day during open-water periods and during ice cover all active ice shacks and open-ice anglers were counted. When counts were not being made, anglers were contacted and interviewed. Angler use and harvest estimates were computed using the Creel Application Software (CAS; Soupir and Brown 2002).

Additional questions asked during interviews were used to obtain angler primary residence, fish species targeted, and angler opinions. Total length (TL; mm) measurements from angler caught fish were recorded during the interview process.

The potential economic value of the Cattail-Kettle Lake fishery was estimated by multiplying a daily angling expenditure of $61 times the estimated number of angler days. The average daily expenditure of $61 was derived from the reported total expenses of $182,480,000 for anglers fishing South Dakota in 2001 and divided by 2,984,000, the estimated number of days spent fishing in South Dakota in 2001 (U.S. Department of Interior, Fish and Wildlife Service, U.S. Department of Commerce Bureau of Census 2001).

Results and Discussion

Angler use and harvest surveys were completed at Cattail-Kettle Lake during the winter of December 2004 through March 2005 and the 2005 summer (May – August).

Fishing Pressure

Walleye were the main target of anglers fishing Cattail-Kettle Lake during the 2004-05 winter and 2005 summer (Table 1). Approximately 46% of interviewed anglers targeted walleyes during the 2004-05 winter and 94% of interviewed anglers indicated they were targeting walleyes during the 2005 summer. Blackwell (2005a) indicated that walleyes were the most sought after species by anglers fishing Cattail-Kettle Lake following the 1999 summer. Walleyes often are the most sought after species by anglers fishing in northeast South Dakota [e.g., Waubay Lake (Blackwell 2005b), Bitter Lake (Blackwell 2005c)].

Fishing pressure was low during the 2004-05 winter with only an estimated 429 angler hours occurring (Table 2). This represents the lowest recorded amount of fishing pressure at Cattail-Kettle Lake. The previous low was an estimated 5,357 angler hours during the 2000-01 winter (Blackwell 2005a). Estimated fishing pressure during the 2005 summer was 13,963 angler hours (Table 2). Fishing pressure during the 2005 summer was similar to that reported during the 1999 summer (10,926 hours), but substantially less than that reported for the 2000 summer (38,972 hr) and 2005 summer (25,232 hr; Blackwell 2005a).

Fishing pressure was almost equally divided between ice shacks and open ice during the 2004-05 winter and virtually all fishing during the 2005 summer occurred from a boat (Table 2). In previous angler use and harvest surveys, greater than 80% of anglers fished from a boat during summer survey periods and greater than 75% of anglers fished from an ice shack during each winter (Blackwell 2005a). Shore-fishing access is limited and likely restricts the amount of shore fishing that occurs at Cattail-Kettle Lake (Blackwell 2005a). A large portion of the shore angling that occurs at Cattail-Kettle Lake likely occurs outside of our survey periods (e.g., spring and fall).

Fishing pressure during the 2004-05 winter and 2005 summer was nearly equally divided between weekdays and weekend/holidays (Table 2). Mean party size approximated two anglers during both survey periods (Table 2). Average angler time of fishing was 3.54 hours during the 2004-05 winter and 5.31 hours during the 2005 summer. These values are similar to those previously reported for average angler trip lengths at Cattail-Kettle Lake. Blackwell (2005) reported that trip length means during the summer periods ranging from 3.48 to 4.62 hours during the 1999, 2000 and 2004 summer while winter trip length means averaged 3.43 to 3.71 hours for the 1998-99, 1999-00, and 2000-01 winters.

The estimated potential economic impact of the Cattail-Kettle Lake fishery on local economies during the 2004-05 winter was $8,174 and $160,430 for the 2005 summer. These values were based on an average South Dakota angling expenditure of $61 per day (U.S. Department of Interior, Fish and Wildlife Service, U.S. Department of Commerce Bureau of Census 2001).

Angler Demographics

South Dakota residents comprised approximately 77% of the interviewed anglers during the 2004-05 winter and 40% of interviewed anglers during the 2005 summer (Tables 2 and 3). The percentage of resident anglers during the 2005 summer was less than that reported in previous surveys. During the summer of 1999, 93% of interviewed anglers were South Dakota residents, 56% were residents during the 2000 summer, and 63% claimed South Dakota as their residence during the 2004 summer (Blackwell 2005a).

Anglers from Marshall, Brown and Roberts Counties tend to comprise the majority of resident anglers fishing at Cattail-Kettle Lake (Figure 1). Aside from these counties, anglers from Minnehaha and Brookings counties frequently fished Cattail-Kettle Lake.

A decrease in the percentage of resident anglers through time was noted in previous angler use and harvest surveys (Blackwell 2005a). It was believed that as information became available about the Cattail-Kettle Lake fishery more nonresident anglers frequented Cattail-Kettle Lake. It is likely that this idea continued during this survey period. North Dakota, Minnesota, and Iowa were the most common nonresident states of anglers fishing Cattail-Kettle Lake during this survey (Table 3). Anglers fishing Cattail-Kettle Lake represented six states in addition to South Dakota during the current survey periods (Table 3).

Angler Catch and Harvest

Walleye

No walleye were caught during the 2004-05 winter (Table 4). Because a high percentage of anglers target walleyes (Table 1), the poor walleye catch likely led to the reduced fishing pressure during the 2004-05 winter. Walleye catch rates during the 2005 summer peaked at 0.39 walleyes per hour fished during June and dropped off in July and August (Table 4). It is not surprising that fishing pressure corresponds to walleye catch and harvest rates. Anglers harvested 0.12 walleyes per hour fished during both May and June 2005 (Table 4). Anglers harvested 0.26 walleyes per hour during the 2000 summer and 0.42 walleyes per angler hour were harvested during the 2004 summer (Blackwell 2005a).

An estimated 3,256 walleyes were caught by anglers during the 2005 summer and of these fish 1,545 were harvested (Table 5). Walleye catch during the 2005 summer was more than 10,000 fish less than that reported for the 2000 and 2004 summers and walleye harvest was approximately 9,000 fewer fish than during the 2000 and 2004 summers (Blackwell 2005a). Although no walleyes were caught during the 2004-05 winter and few were caught and harvested during the 2005 summer, walleye abundance appeared to be high in Cattail-Kettle Lake during this period. Walleye gill net catch rates during annual standardized sampling were at or exceeded 15 walleyes per net during the 2003 through 2005 summers (Ermer et al. 2006). The overall walleye population average physical condition, as measured by relative weight (Wr), increased from 90 in 2003, to 94 in 2004, and to 97 in 2005 (Ermer et al. 2006). Perhaps the increased condition of the walleyes during this period indicates that food availability has increased. An increase in food availability may have resulted in the observed decreases in angler catch rates for walleyes.

Harvested walleyes ranged between 16 and 25 inches (406 and 635 mm) with a mean total length of 19.8 inches (503 mm; Figure 2). The average walleye in the angler creel during the 2005 summer represented an increase from that observed in the 2004 summer. The average walleye in the angler creel during the 2004 summer was 18.7 inches (475 mm) TL (Blackwell 2005a).

Yellow Perch

No yellow perch were caught nor harvested during the 2004-05 winter and only 20 perch were estimated to have been caught during the 2005 summer (Tables 4 and 5). Yellow perch abundance decreased between 2003 and 2005 (Ermer et al. 2006). Summer gill net catch rates for stock-length yellow perch decreased from 42.3 per net (2003) to 23.5 per net (2005). Blackwell (2005) indicated that a reduction in angler catches of yellow perch followed a trend of lower yellow perch population size structure. He indicated that the Cattail-Kettle Lake yellow perch population's proportional stock density (PSD) was 63 in August 1998 and had remained below 20 since. This trend in PSD has continued between 2003 and 2005 (Ermer et al. 2006).

Northern Pike

Northern pike were the only fish species known to be caught during the 2004-05 winter and were the second most caught and harvested species during the 2005 summer (Tables 4 and 5). Northern pike have been a consistent part of the angler creel at Cattail-Kettle Lake. Catches during the 2004-05 winter and 2005 summer were lower than those observed in previous angler use and harvest surveys (Blackwell 2005a). Angler catch and harvest likely follows northern pike year class strength. Gill net catch rates averaged less than one northern pike per net between 2003 and 2005 (Ermer et al. 2006).

Other Species

An occasional black bullhead was caught during the 2005 summer (Tables 4 and 5). Black bullheads were common in the angler catch during the 1999 summer, but few were harvested. A drastic reduction in black bullhead frame net and gill net catches was observed between the 2003 and 2005 standard fish samples (Ermer et al. 2006). Frame net average catch rates decreased from 548.7 black bullheads in 2003, to 5.4 in 2004, and to 1.3 bullheads in 2005

while gill net average catch rates for bullheads decreased from 42.2 per gill net in 2003, to 5.1 in 2004, and to 1.3 in 2005.

Largemouth bass and black crappies were infrequent in the angler creel during the 2005 summer (Tables 4 and 5). Largemouth bass and black crappies were not abundant in previous angler use and harvest surveys (Blackwell 2005a). Up to this point in time, black crappies have not been abundant during standard fish sampling surveys completed at Cattail-Kettle Lake (Ermer et al. 2006).

Angler Opinions

During the 2004-05 winter, 46.2% of interviewed anglers indicated that catching fish was the most important factor in determining a successful fishing trip and 38.5% indicated relaxation (Table 6). In the 2004 summer, anglers indicated that that relaxation (48.3%) and catching fish (22.1%) were the most important factors to a successful fishing trip. With the importance of catching fish it is no wonder that few people fished Cattail-Kettle during the 2004-05 winter given the poor walleye catch rates.

Surprisingly, 53.8% of interviewed anglers were satisfied with their fishing trip during the 2004-05 winter (Table 7) even though few fish were caught. Angler satisfaction has been high at Cattail-Kettle Lake with greater than 70% of interviewed anglers indicating that they were satisfied or slightly satisfied with their fishing during surveys completed between December 1998 and August 2004 (Blackwell 2005a).

During the 2005 summer, no interviewed anglers were opposed to making a statewide regulation of one walleye over 508 mm (20 inches) in the daily limit (Table 8). Nearly 75% of interviewed anglers were opposed to reducing the walleye daily limit from four to three walleyes (Table 9). Opposition to a reduction in the walleye daily limit by Cattail-Kettle Lake anglers is somewhat surprising as greater than 50% of anglers interviewed at Cattail-Kettle Lake during the 2000 summer and 2000-01 winter viewed harvesting fish as only somewhat to not important in the success of their fishing trip (Blackwell 2005a). Anglers have generally been happy with the current walleye regulation of four walleyes daily with a minimum length limit of 406 mm (16 inches) and only one walleye greater than 508 mm (20 inches; Blackwell 2005a).

Greater than 60% of interviewed anglers during the 2005 summer favored the reduction in the panfish daily limit from 25 to 10 (Table 10). This is a reversal of opinion from the 2000-01 winter when 70% of interviewed anglers were against a possible reduction in the yellow perch daily limit from 25 fish daily (Blackwell 2005a).

Angler responses were mixed when asked about reducing the northern pike daily limit from six to three. Nearly equal numbers of interviewed anglers opposed a reduction in the northern pike daily limit as were supportive (Table 11).

Table 1. Primary target species (percentage) by month and overall period (winter = December – March and summer = May – August) for anglers fishing at Cattail-Kettle Lake, South Dakota from December 2004 through August 2005. Abbreviations for species are as follow - northern pike (NOP), black crappie (BLC), yellow perch (YEP), and walleye (WAE).

		Target species (%)				
Year	Month	Any	NOP	BLC	YEP	WAE
2004	December	No anglers were interviewed during December.				
2005	January	12.5	37.5	0.0	0.0	50.0
	February	0.0	0.0	0.0	33.3	66.7
	March	100.0	0.0	0.0	0.0	0.0
	Overall	23.1	23.1	0.0	7.7	46.2
2005	May	12.5	0.0	0.0	0.0	87.5
	June	2.6	0.0	0.0	0.0	97.4
	July	0.0	0.0	0.0	0.0	100.0
	August	0.0	0.0	0.0	0.0	100.0
	Overall	4.5	1.5	0.0	0.0	94.0

Table 2. Monthly and total by survey period (winter = December – March and summer = May – August), number of angler interviews (# Int), estimated angler hours, estimated angler days, estimated economic value (Eco Value; $), estimated trip length (hours), average party size, percent of interviewed anglers that were South Dakota (SD) residents, percent of angling activity by boat (B) or ice shack (S) and percent of angling activity that occurred during weekend/holidays (WE/H) at Cattail-Kettle Lake, South Dakota during surveys completed between December 2004 and August 2005. One standard error is provided in parentheses when able to calculate.

Year	Month	# Int	Angler hours	Angler Days	Eco Value ($)	Trip Length (h)	Party Size	% SD	% B or S	% WE/H
2004	December	No anglers were observed during December.								
2005	January	8	166 (70)	36	2,196	4.56 (---)	1.90 (0.07)	87.5	81.7	87.0
	February	3	84 (46)	40	2,440	2.08 (---)	1.67 (---)	66.7	39.1	13.9
	March	2	179 (72)	58	3,538	3.08 (---)	1.50 (---)	50.0	29.6	56.2
	Total	13	429 (111)	121	8,174	3.54 (---)	1.77 (0.04)	76.9	51.6	59.8
2005	May	24	6,879 (2,980)	1,244	75,884	5.53 (---)	2.47 (---)	16.7	97.2	56.2
	June	39	5,770 (1,520)	1,079	65,819	5.35 (---)	2.28 (0.30)	53.9	97.2	28.5
	July	2	1,031 (483)	227	13,847	4.55 (---)	2.50 (---)	0.0	98.0	62.4
	August	1	316 (255)	80	4,880	-- (---)	1.00 (---)	100	100	77.3
	Total	67	13,963 (3,384)	2,630	160,430	5.31 (---)	2.05 (0.10)	40.3	97.6	45.8

Table 3. Home state residence (percentage) of anglers fishing at Cattail-Kettle Lake, South Dakota during the 2004-05 winter (December – March) and the 2005 summer (May – August).

	Percentage (%) of anglers	
State	2004-05	2005
South Dakota	76.9	40.3
Colorado		1.5
Iowa		11.9
Kansas		3.0
Minnesota	7.7	19.4
Nebraska	7.7	3.0
North Dakota	7.7	20.9

Table 4. Estimated angler catch rate per hour fished (C/h) and harvest rate per hour fished (H/h) for all anglers by species, month and total period (winter = December – March and summer = May – August) for black bullhead (BLB), northern pike (NOP), largemouth bass (LMB), black crappie (BLC), yellow perch (YEP), and walleye (WAE) at Cattail-Kettle Lake, South Dakota for surveys completed between December 2004 and August 2005. One standard error is provided in parentheses when calculated.

		BLB		NOP		LMB		BLC		YEP		WAE	
Year	May	C/h	H/h	C/h	H/h	C/h	H/h	C/h	H/h	C/h	H/h	C/h	H/h
2004	December	No anglers were interviewed during December											
2005	January	0.0	0.0	0.14 (0.07)	0.14 (0.07)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.06 (0.03)	0.06 (0.03)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	May	0.0	0.0	0.09 (---)	0.02 (0.01)	0.0	0.0	0.0	0.0	<0.01 (<0.01)	0.0	0.15 (0.19)	0.12 (0.12)
	June	<0.01 (<0.01)	<0.01 (<0.01)	0.04 (0.03)	0.03 (0.02)	<0.01 (<0.01)	0.0	<0.01 (<0.01)	<0.01 (<0.01)	0.0	0.0	0.39 (0.28)	0.12 (0.07)
	July	0.0	0.0	0.05 (0.06)	0	0	0.0	0.0	0.0	0.0	0.0	0.05 (0.08)	0.05 (0.08)
	August	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	<0.01 (<0.01)	<0.01 (<0.01)	0.07 (---)	0.02 (<0.01)	<0.01 (<0.01)	0.0	<0.01 (<0.01)	<0.01 (<0.01)	<0.01 (<0.01)	0.0	0.23 (0.15)	0.11 (0.07)

Table 5. Estimated angler catch (C) and harvest (H) by month and total period (winter = December – March and summer = May – August) for black bullhead (BLB), northern pike (NOP), largemouth bass (LMB), black crappie (BLC), yellow perch (YEP), and walleye (WAE) at Cattail-Kettle Lake, South Dakota for surveys completed between December 2004 and August 2005. One standard error is provided in parentheses when calculated.

		BLB		NOP		LMB		BLC		YEP		WAE	
Year	Month	C	H	C	H	C	H	C	H	C	H	C	H
2004	December	No anglers were interviewed during December											
2005	January	0	0	24 (14)	24 (14)	0	0	0	0	0	0	0	0
	February	0	0	0	0	0	0	0	0	0	0	0	0
	March	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	24 (14)	24 (14)	0	0	0	0	0	0	0	0
2005	May	20 (5)	20 (5)	649 (---)	105 (0)	0	0	0	0	20 (5)	0	1,039 (378)	798 (208)
	June	5 (2)	5 (2)	234 (132)	159 (102)	5 (2)	0	5 (2)	5 (2)	0	0	2,238 (806)	709 (170)
	July	0	0	57 (55)	0	0	0	0	0	0	0	57 (82)	57 (82)
	August	0	0	0	0	0	0	0	0	0	0	0	0
	Total	25 (5)	25 (5)	931 (134)	257 (94)	5 (2)	0	5 (2)	5 (2)	20 (5)	0	3,256 (859)	1,545 (279)

Table 6. Cattail-Kettle Lake, South Dakota, angler responses, during the 2004-05 winter, to the question: "What is the most important factor to you in defining a successful fishing trip?" n is the number of responses.

	Percent (%)
Response	(n = 13)
Relaxation	38.5
Harvesting fish	7.7
Participating	7.7
Catching fish	46.2
Being with others	0
Other	0

Table 7. Cattail-Kettle Lake, South Dakota, angler responses, during the 2004-05 winter, to the question: "Considering all factors, how satisfied are you with your fishing trip today?" n is the number of responses.

	Percent (%)
Response	(n=13)
Satisfied	53.8
Slightly satisfied	15.4
Neutral	15.4
Slightly dissatisfied	7.7
Dissatisfied	7.7

Table 8. Cattail-Kettle Lake, South Dakota, angler responses, during the 2005 summer, to the question: "What is your opinion on making the one walleye over 508 mm (20 inches) restriction a statewide regulation?" n is the number of responses.

	Percent (%)
Response	(n=17)
Strongly oppose	0.0
Somewhat oppose	0.0
Neutral	11.8
Somewhat favor	11.8
Strongly favor	76.5

Table 9. Cattail-Kettle Lake, South Dakota, angler responses, during the 2005 summer, to the question: "What is your opinion on reducing the statewide daily walleye limit from four to three?" n is the number of responses.

	Percent (%)
Response	(n=17)
Strongly oppose	41.2
Somewhat oppose	23.5
Neutral	11.8
Somewhat favor	5.9
Strongly favor	17.7

Table 10. Cattail-Kettle Lake, South Dakota, angler responses, during the 2005 summer, to the question: "What is your opinion on reducing the panfish limit from 25 to 10?" n is the number of responses.

	Percent (%)
Response	(n=26)
Strongly oppose	7.7
Somewhat oppose	11.5
Neutral	19.2
Somewhat favor	7.7
Strongly favor	53.9

Table 11. Cattail-Kettle Lake, South Dakota, angler responses, during the 2005 summer, to the question: "What is your opinion on reducing the statewide daily northern pike limit from six to three?" n is the number of responses.

	Percent (%)
Response	(n=26)
Strongly oppose	23.1
Somewhat oppose	15.4
Neutral	23.1
Somewhat favor	11.5
Strongly favor	26.9

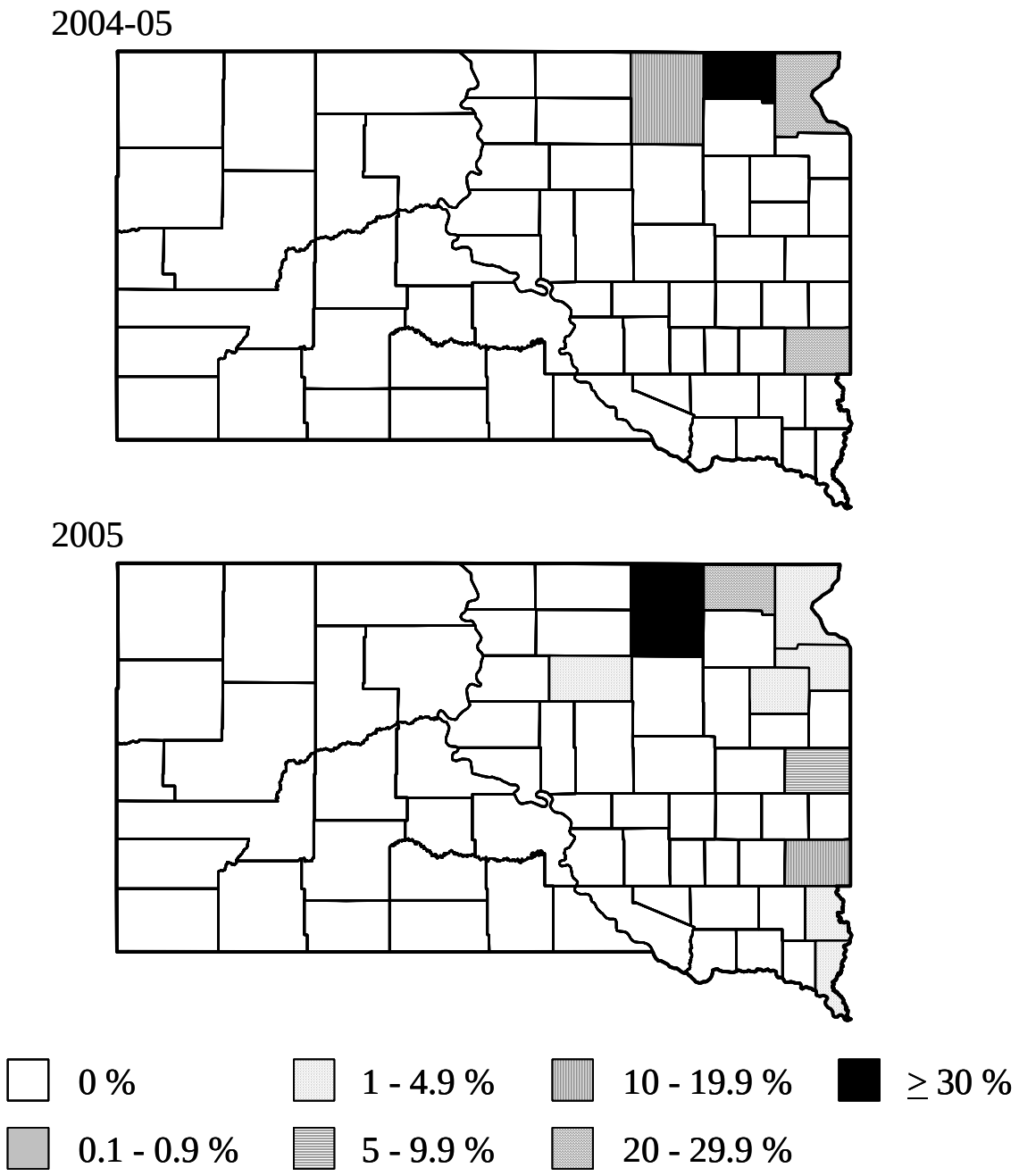

Figure 1. South Dakota county of residence for South Dakota resident anglers fishing Cattail-Kettle Lake during 2004-05 winter (December – March) and 2005 summer (May –August).

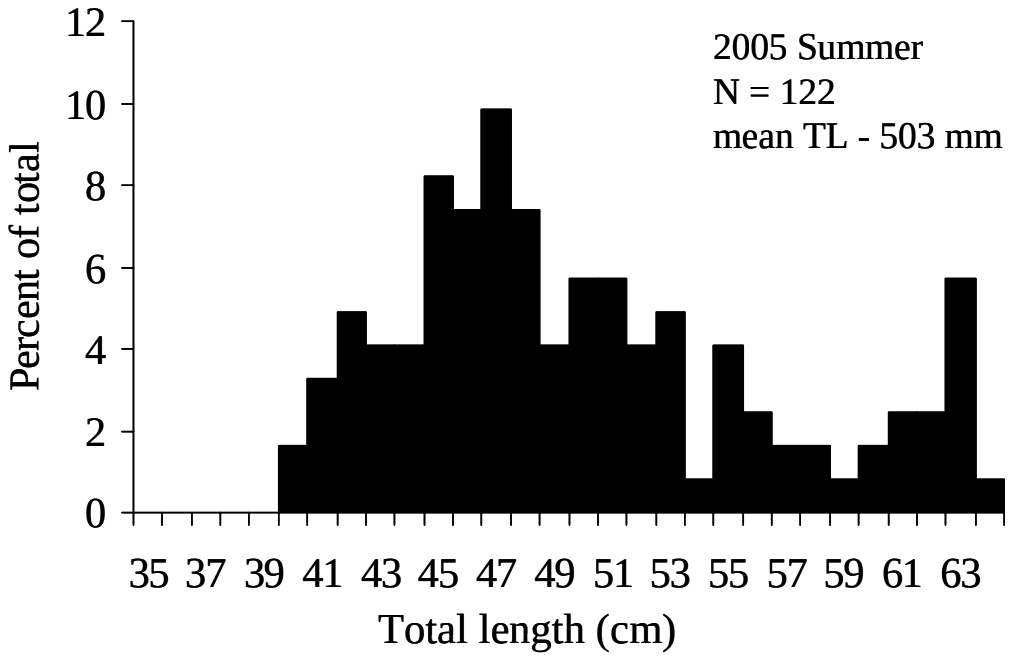

Figure 2. Length frequency histogram of walleye harvested by anglers fishing Cattail-Kettle Lake, South Dakota during the 2005 summer (May – August), N is the total number of fish measured and the mean total length (TL) is provided.

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Appendix A. Common and scientific names of fishes mentioned in this report.

Common name	Scientific name
Black bullhead	*Ameirus melas*
Black crappie	*Pomoxis nigromaculatus*
Largemouth bass	*Micropterus salmoides*
Northern pike	*Esox lucius*
Walleye	*Sander vitreus*
Yellow perch	*Perca flavescens*

Appendix B. Winter and summer number of angler interviews (# Int), estimated angling hours, estimated angler days, estimated trip length (h), average party size, percent of interviewed anglers that were South Dakota residents (% SD), percent of angling activity by boat or ice shack (%B or S) and percent of angling activity that occurred during weekend/holidays (%WE/H) at Cattail-Kettle Lake, South Dakota. One standard error is provided in parentheses when calculated.

Season/ Year	Months	# Int	Angler hours	Angler Days	Trip Length (h)	Party Size	% SD	% B or S	% WE/H
Winter									
1998-99 [a]	12,1,2,3	215	8,686	2,418	3.61	1.94	91.0	47.5	41.3
1999-00 [a]	12,1,2,3	295	13,513	4,057	3.43	2.10	76.8	61.2	48.1
2000-01 [a]	12,1,2,3	50	5,357	2,050	3.71	2.26	86.8	74.6	66.1
2004-05 [b]	12,1,2,3	13	429 (111)	121	3.54 (---)	1.77 (0.04)	76.9	51.6	59.8
Summer									
1999 [a]	5,6,7,8	96	10,926	2,978	3.48	2.46	92.8	83.0	47.5
2000 [a]	5,6,7,8	296	38,972	8498	4.62	2.48	55.9	96.2	47.7
2004 [a]	5,6,7,8	150	25,232 (4,238)	5,787	4.36 (0.07)	2.00 (0.23)	61.4	97.7	41.2
2005 [b]	5,6,7,8	67	13,963 (3,384)	2,630	5.31 (---)	2.05 (0.10)	40.3	97.6	45.8

a - Blackwell (2005a), b – current report

Appendix C. Estimated winter and summer angler catch rate per hour fished (C/h) and harvest rate per hour fished (H/h) of black bullhead (BLB), northern pike (NOP), largemouth bass (LMB), black crappie (BLC), yellow perch (YEP), and walleye (WAE) at Cattail-Kettle Lake, South Dakota. One standard error is provided in parentheses when calculated.

Season/		BLB		NOP		SMB		LMB		BLC		YEP		WAE	
Year	Months	C/h	H/h	C/h	H/h	C/h	H/h	C/h	H/h	C/h	H/h	C/h	H/h	C/h	H/h
Winter															
1998-99 [a]	12,1,2,3	0.0	0.0	0.17	0.12	0.0	0.0	0.0	0.0	<0.01	<0.01	1.69	0.50	0.10	0.02
1999-00 [a]	12,1,2,3	0.0	0.0	0.15	0.08	0.0	0.0	0.0	0.0	0.07	0.06	0.57	0.18	0.23	0.12
2000-01 [a]	12,1,2,3	0.0	0.0	0.18	0.11	0.0	0.0	0.0	0.0	0.0	0.0	0.03	<0.01	0.44	0.02
2004-05 [b]	12,1,2,3	0.0	0.0	0.06 (0.03)	0.06 (0.03)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Summer															
1999 [a]	5,6,7,8	0.49	0.02	0.12	0.04	0.0	0.0	0.01	0.01	<0.01	<0.01	3.07	0.67	0.34	0.02
2000 [a]	5,6,7,8	0.0	0.0	0.22	0.04	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.18	0.03	0.48	0.26
2004 [a]	5,6,7,8	<0.01 (<0.01)	<0.01 (<0.01)	0.11 (0.04)	0.03 (0.02)	<0.01 (<0.01)	0.00	0.01 (0.01)	0.0	<0.01 (<0.01)	<0.01 (<0.01)	<0.01 (<0.01)	<0.01 (<0.01)	0.54 (0.29)	0.42 (0.28)
2005 [b]	5,6,7,8	<0.01 (<0.01)	<0.01 (<0.01)	0.07 (---)	0.02 (<0.01)	0.0	0.0	<0.01 (<0.01)	0.0	<0.01 (<0.01)	<0.01 (<0.01)	<0.01 (<0.01)	0.0	0.23 (0.15)	0.11 (0.07)

a - Blackwell (2005a), b – current report

Appendix D. Estimated winter and summer angler catch (C) and harvest (H) of black bullhead (BLB), northern pike (NOP), largemouth bass (LMB), black crappie (BLC), yellow perch (YEP), and walleye (WAE) at Cattail-Kettle Lake, South Dakota. One standard error is provided in parentheses when calculated.

Season/		BLB		NOP		SMB		LMB		BLC		YEP		WAE	
Year	Month	C	H	C	H	C	H	C	H	C	H	C	H	C	H
Winter															
1998-99 [a]	12,1,2,3	0	0	1,505	1,044	0	0	0	0	53	38	14,728	4,304	893	168
1999-00 [a]	12,1,2,3	0	0	2,029	1,044	0	0	0	0	978	825	7,750	2,383	3,069	1,593
2000-01 [a]	12,1,2,3	0	0	943	616	0	0	0	0	0	0	140	19	2,340	95
2004-05 [b]	12,1,2,3	0	0	24 (14)	24 (14)	0	0	0	0	0	0	0	0	0	0
Summer															
1999 [a]	5,6,7,8	5,396	16	1,298	467	0	0	143	143	34	16	33,519	7,358	3,721	206
2000 [a]	5,6,7,8	0	0	8,507	1,693	9	0	12	0	864	633	6,923	1,329	18,836	10,059
2004 [a]	5,6,7,8	37 (30)	24 (27)	2,798 (641)	701 (411)	74 (46)	0	269 (256)	0	147 (133)	147 (133)	37 (27)	3 (3)	13,605 (6,537)	10,583 (6,483)
2005 [b]	5,6,7,8	25 (5)	25 (5)	931 (134)	257 (94)	0	0	5 (2)	0	5 (2)	5 (2)	20 (5)	0	3,256 (859)	1,545 (279)

a - Blackwell (2005a), b – current report