



Saskatchewan River Lake Sturgeon Harvest Surveys 2001-2002

January 2003

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Prepared for
Saskatchewan River Sturgeon Management Board

by

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EXECUTIVE SUMMARY

On behalf of the Saskatchewan River Sturgeon Management Board, lake sturgeon harvest surveys were undertaken at The Pas, MB during the summers of 2001 and 2002 and at Cumberland House, SK in 2002. Fishermen were interviewed in boats and on shore to collect information on sturgeon fishing activity and harvests. The 2001 survey also included interviews with 15 Opaskwayak Cree Nation households with regard to their sturgeon harvesting activity from 1999-2001.

A total of 144 groups of fishermen were interviewed on the Saskatchewan River near The Pas from mid-June to mid-August, 2001. All but one of the groups were anglers. Fifty-seven lake sturgeon were observed harvested. Catch-per-unit-effort was 0.0002 sturgeon/angler/hour. All sturgeon were taken by groups with at least one First Nations member. More than 80% of the sturgeon measured and weighed were less than 100 cm in length and less than 16 kg in weight. Approximately 60% of the sturgeon had weights estimated at less than 8 kg (17.6 lbs). Extrapolating the observed catch, to account for the time remaining to be fished by anglers on each survey day and for the days that were not surveyed, yielded an estimated total harvest for June 1 to August 31 of 302 sturgeon. The estimated harvest should be viewed with caution, however, because harvest survey methodology was not well documented. The household surveys suggested that annual harvests were similar from 1999 to 2001.

A total of 66 groups of fishermen were interviewed on the Saskatchewan River in the vicinity of The Pas during the summer survey in 2002. Sixty-two groups were anglers, three were commercial fishermen and one was a fishing derby. A total of 49 sturgeon were reported as captured of which 26 were harvested. All harvested sturgeon were taken by groups with at least one First Nations member. Catch-per-unit-effort was 0.0005 sturgeon/angler/hour. Total harvest from June 1 to September 30 was estimated to be 106 sturgeon (based on the number of hours remaining to be fished on survey days and the proportion of days surveyed versus those not surveyed). Again, the estimate must be viewed with caution because of inconsistencies in survey methodology. Mean length of harvested sturgeon that were measured in 2002 (n=11, 62 cm) was 28% smaller than harvested sturgeon measured in 2001. Forty-seven percent of sturgeon captured were released in 2002 compared to just 8% in 2001.

At Cumberland House, a total of 58 groups, comprised of 147 individual fishers, were interviewed on the Saskatchewan River from the mouth of the Torch River to the Manitoba/Saskatchewan border, from late-June to late-September, 2002. Interviews were conducted with 30 groups of anglers, 27 groups of domestic fishers, one group of commercial fishers, and two fishing derby groups. A total of 21 lake sturgeon were reported as captured (excluding fish turned over to the index-fishing program), 17 of which were harvested. Catch-per-unit-effort was 0.0004 sturgeon/angler/hour. The mean estimated weight of the harvested sturgeon (n=12, 10.9 kg) was 27% higher than the mean estimated weight of sturgeon harvested at The Pas in 2001. Nineteen percent of sturgeon captured were released. The 17 sturgeon reported as harvested represent a minimum level of sturgeon harvest from the Saskatchewan River near Cumberland

House. A number of factors precluded an estimate of the total harvest, which would be expected to be higher.

Lake sturgeon harvests from the Saskatchewan River at Cumberland House and The Pas were at least 74 fish (the reported harvest), and possibly as high as 319 fish (17 sturgeon at Cumberland House plus the extrapolated harvest at The Pas), annually in 2001 and 2002. Weight data suggested that approximately 50% of the sturgeon harvested were less than 8 kg. The known harvest of 37 lake sturgeon 8 kg and over (40% of 57 observed at The Pas in 2001 plus 83% of 17 sturgeon observed or reported at Cumberland House in 2002), from the SRSMB population estimate of sturgeon 8 kg and over (1300 fish), amounts to a harvest of approximately 2.8%. Extrapolated harvest estimates suggest that the harvest may be as high as 160 sturgeon 8 kg and over annually, or 12.3% of the population estimate. While the known harvest level (observed or reported) would be within what is considered a safe harvest level for lake sturgeon by most management agencies (5%), the estimated harvest level is clearly unsustainable. Of possibly greater concern is that an equal number of sturgeon less than 8 kg in weight are also being harvested from a segment of the population for which there is no information on abundance. Using current SRSMB monitoring techniques, the effect that these harvests are having on the sturgeon population will not become apparent for a number of years. In the face of this uncertainty, the SRSMB should direct effort to prevent domestic harvests from increasing and encourage a voluntary reduction. The harvests documented by the harvest surveys also serve to underline the importance of modifying the SRSMB monitoring program such that population estimates can be expanded to include all sturgeon targeted by the domestic fishery.

Although the 2001 harvest survey at The Pas provided an understanding of the lake sturgeon harvest from the Saskatchewan River, the goal in 2002 was to improve survey methodology and provide a more accurate estimate of sturgeon harvests in both Manitoba and Saskatchewan. Unfortunately, inconsistencies in data collection again precluded accurate estimates of total harvests in 2002. Improvements in data collection will be required if the Board wants to obtain an accurate estimate of sturgeon harvests in the future.

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Mr. Robert McGillvary (OCN) and Mr. John Carriere (Cumberland House) are thanked for their assistance in setting up the surveys in The Pas and Cumberland House, respectively. Mr. McGillvary also acted as a valuable liaison between the consultant and the project surveyors at The Pas.

Mr. Solomon Constant (OCN) is acknowledged for conducting the survey at The Pas in 2001. Mr. Alex Constant (OCN) conducted the survey at The Pas, and Lily and Clifford Carriere (Cumberland House) conducted the survey at Cumberland House in 2002.

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 THE PAS 2001	1
2.1 Methods.....	1
2.2 Results and Discussion	3
2.2.1 <i>River Survey</i>	3
2.2.2 <i>Household Survey</i>	8
2.3 Summary.....	9
3.0 THE PAS 2002	9
3.1 Methods.....	10
3.2 Results and Discussion	10
3.3 Summary.....	15
4.0 CUMBERLAND HOUSE 2002	16
4.1 Methods.....	16
4.2 Results and Discussion	16
4.3 Summary.....	19
5.0 CONCLUSIONS AND RECOMMENDATIONS	21

LIST OF FIGURES

	<u>Page</u>
Figure 1. Length-frequency distribution of Saskatchewan River sturgeon kept and released near The Pas, 2001.....	5
Figure 2. Weight-frequency distribution of Saskatchewan River sturgeon kept and released near The Pas, 2001.....	6
Figure 3. Daily catch of Saskatchewan River sturgeon near The Pas, 2001.....	7
Figure 4. Length-frequency distribution of Saskatchewan River sturgeon kept and released near The Pas, 2002.....	14
Figure 5. Daily catch of sturgeon from the Saskatchewan River near The Pas, June 6-September 25, 2002.....	15
Figure 6. Weight-frequency distribution of Saskatchewan River sturgeon harvested near Cumberland House, 2002.....	20
Figure 7. Observed daily catch of sturgeon from the Saskatchewan River near Cumberland House, 2002.....	20

LIST OF TABLES

Table 1. The number of daily sturgeon harvest interviews conducted at The Pas in 2001.....	3
Table 2. The number and types of fishers interviewed at The Pas, 2001.....	3
Table 3. Number of hours fished by anglers prior to being interviewed and the estimated additional time to be fished post-interview on survey days in The Pas 2001.....	4
Table 4. The number of boat and shore interviews conducted at The Pas, 2001.....	4
Table 5. Fishing sites on the Saskatchewan River used by groups fishing near The Pas, 2001.....	4
Table 6. Sturgeon catch and harvest information from The Pas, 2001.....	5
Table 7. Extrapolated estimate of total sturgeon harvested from the Manitoba side of the Saskatchewan River near The Pas, 2001.....	8

	<u>Page</u>
Table 8. Sturgeon harvest information from household surveys at The Pas, 2001.....	9
Table 9. The number of daily sturgeon harvest interviews conducted at The Pas in 2002.	11
Table 10. The number and types of fishers interviewed at The Pas, 2002	11
Table 11. Number of hours fished by anglers and by derby fishers prior to being interviewed and the estimated additional time to be fished post-interview on survey days in The Pas, 2002.....	12
Table 12. The number of boat and shore interviews (excluding the fishing derby) conducted at The Pas, 2002.	12
Table 13. Fishing sites on the Saskatchewan River used by groups fishing near The Pas, 2002.....	12
Table 14. Sturgeon catch and harvest information from The Pas, 2002.....	13
Table 15. Extrapolated estimate of total sturgeon harvested from the Manitoba side of the Saskatchewan River near The Pas, 2002.....	13
Table 16. The number of daily sturgeon harvest interviews conducted at Cumberland House in 2002.	17
Table 17. The number and types of fishers interviewed at Cumberland House, 2002.....	17
Table 18. Number of hours fished by anglers and by derby fishers prior to being interviewed and the estimated additional time to be fished post-interview on survey days in Cumberland House, 2002.	18
Table 19. The number of boat, shore, camp and multiple location interviews (excluding fishing derby interviews) conducted at Cumberland House, 2002.....	18
Table 20. Fishing sites on the Saskatchewan River used by groups fishing near Cumberland House, 2002.....	18
Table 21. Sturgeon catch and harvest information from Cumberland House, 2002.....	19

LIST OF APPENDICES

	<u>Page</u>
Appendix 1. Sample questionnaire for the Saskatchewan River Lake Sturgeon Harvest Study river survey at The Pas, 2001.....	25
Appendix 2. Sample questionnaire for the Saskatchewan River Lake Sturgeon Harvest Study household survey at The Pas, 2001.....	29
Appendix 3. Sample questionnaires for the Saskatchewan River Lake Sturgeon Harvest Study river survey at The Pas, 2002.	33
Appendix 4. Sample questionnaire for the Saskatchewan River Lake Sturgeon Harvest Study river survey at Cumberland House, 2002.....	39
Appendix 5. Data reported for sturgeon captured and released by index fishers during the Cumberland House, 2002 survey that were also reported to SRSMB.....	43

1.0 INTRODUCTION

The mission of the Saskatchewan River Sturgeon Management Board (SRSMB) is to prevent further decline of the lake sturgeon (*Acipenser fulvescens*) population in the Saskatchewan River between E.B. Campbell Dam, SK, and Grand Rapids Dam, MB, and to develop and coordinate a recovery plan. To effectively manage the population, it is essential to have an understanding of the number of fish being harvested. In 1995, commercial fishing for sturgeon was discontinued in both provinces, leaving the aboriginal domestic fishery as the only remaining legal harvest of sturgeon from the river. The SRSMB recognizes the domestic harvest as an important component of traditional lifestyles and has the desire to see harvests continue into the future. However, the Board also recognizes that the domestic harvest may be one of the key factors currently limiting the population. To develop a better understanding of how domestic harvests may be affecting the population, the SRSMB, with funding provided by Manitoba Hydro and SaskPower Corporation, undertook harvest surveys at The Pas, MB, in 2001 and 2002, and at Cumberland House, SK, in 2002. This report documents results from the three studies.

2.0 THE PAS 2001

The objective of the harvest survey at The Pas in 2001 was to estimate the number and size of sturgeon harvested from the Saskatchewan River between the Manitoba/Saskatchewan border and the mouth of the Summerberry River, Manitoba. A student from Keewatin Community College in The Pas was hired by Opaskwayak Creek Nation (OCN) to conduct the survey.

2.1 Methods

Individual creel interviews were conducted on the Saskatchewan River from June 17 to August 18, 2001. The criteria to choose the days on which interviews would be conducted are unknown. It is believed that the surveyor went to known fishing locations, which were generally within 10 km of The Pas. All individuals or groups of fishers in boats or on shore were approached and asked a series of questions with regard to their town or area of origin, fishing activity, and harvest.

The following information was to be obtained from each interview:

- date and time of interview;
- fishing location;
- group size and the number of first nation and non-first nation fishers per group;
- fishing type (angling, domestic net, commercial net) and position (shore or boat);
- number of hours fished to the time of interview and number of additional hours of fishing expected to occur that day;
- number of sturgeon caught, kept and released;

- tag numbers of sturgeon captured;
- total lengths (nearest inch or cm) and estimated weights (pounds or kg) of sturgeon kept; and,
- total number of fish of other species (other than sturgeon) captured.

An example of the survey questionnaire is provided in Appendix 1.

Field data sheets were compiled and submitted to OCN, and subsequently to Manitoba Conservation and then North/South Consultants Inc. Field data were collated and summarized to provide information on the following:

- preferred fishing locations (% of total interviews);
- mean group size (overall, per fishing type, per fishing position);
- mean number of first nation and non-first nation fishers per group;
- mean number of hours fished and mean number of hours remaining to be fished that day;
- mean number of sturgeon caught, kept and released for all fishers and for fishers who caught, kept and released sturgeon;
- catch per unit effort estimates (CPUE, number fish/hour) for sturgeon;
- average lengths and weights of sturgeon harvested;
- daily catch rate of sturgeon;
- extrapolated estimate of the total harvest from June 1 to August 31, 2001; and,
- mean number of other fish species caught, kept and released for all fishers and for fishers who caught, kept and released other species.

A household survey was also conducted at OCN from June 13-23, 2001. A total of 15 households were surveyed, eight because they were known to have an active sturgeon fisher, and seven on a random basis. The method of randomization was unknown. The following information was to be collected from each household interview:

- date and time of interview;
- treaty number;
- household size and the number of first nation and non-first nation fishers per household from 1999-2001;
- fishing type (angling, domestic net, commercial net) and position (shore or boat);
- number of sturgeon caught, kept and released from 1999-2001; and,
- how sturgeon were used.

An example of the household questionnaire is provided in Appendix 2. Data compilation, analyses, and summary were similar to the river creel survey data.

2.2 Results and Discussion

2.2.1 River Survey

Harvest surveys were conducted on 31 days from June 17 to August 18, 2001 (12 in June, 14 in July, and five in August). Eighty-four interviews were conducted in June, 208 in July, and 73 in August for a total of 365 (Table 1). Interviews were conducted on each day of the week, ranging from 24 on Thursdays to 88 on Sundays (Table 1). There were no Monday-Thursday surveys in August. A total of 102 hours were spent surveying, or on average 3.3 hours per sampling day.

Table 1. The number of daily sturgeon harvest interviews conducted at The Pas in 2001.

Date	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
June	5	14	10	9	19	9	18	84
July	20	30	41	15	19	31	52	208
August	0	0	0	0	19	36	18	73
Total	25	44	51	24	57	76	88	365

A total of 144 groups of fishers were interviewed, comprised of 365 individual fishers (Table 2). Of the 365 fishers interviewed, 273 (75%) were members of a First Nation and 92 (25%) were non-First Nations individuals. The mean size of the groups interviewed was 2.53 fishers. With the exception of one interview with a domestic net fisher, all interviews were conducted with anglers (Table 2).

Table 2. The number and types of fishers interviewed at The Pas, 2001.

	Total # of Fishers	First Nation Fishers	Non-First Nation Fishers	Anglers	Domestic Net Fishers
# Fishers	365	273	92	364	1
# Groups	144	109	41	143	1
# Fishers/group	2.53	2.50	2.24	2.55	1.00

Those interviewed reported fishing for 909 hours on the day of the interview or an average of 2.5 hours per angler (Table 3). Anglers indicated that they expected to fish for an additional 789 hours, or 2.2 hours per angler, for the remainder of the day following the interviews (Table 3).

A total of 279 interviews (76%) were conducted with groups in boats and 85 (23%) were conducted with groups on shore (Table 4). The single domestic net fisher interview was

conducted at an unreported location. Although exact locations of the interviews were not reported, they are designated by well-known local names. The most frequent sites where interviews were conducted are listed in Table 5. Sloop's Camp (21.1% of groups surveyed) was the site where fishers were most frequently encountered. There may be some inconsistencies in location results, as some places appeared to have multiple names (Sloop's Camp was also called John Peter's Camp in some interviews).

Table 3. Number of hours fished by anglers prior to being interviewed and the estimated additional time to be fished post-interview on survey days at The Pas, 2001.

	Time already Fished	Time remaining to be Fished
Hours fished	909	789
# of anglers	364	364
# of angler groups	143	143
Hours fished/angler	2.50	2.17
Hours fished/group	6.36	5.52

Table 4. The number of boat and shore interviews conducted at The Pas, 2001.

Location	Anglers	Domestic*	First Nation	Non-First Nation
Boats	279	0	208	71
Shore	85	0	64	21

* Single domestic net location not specified

Table 5. Fishing sites on the Saskatchewan River used by groups fishing near The Pas, 2001.

	Sloop's Camp	Sangedor's	Miss Chuck's Farm	Carrot River	Rocky Point	Big Eddy	Reeder's Cut-off	Misc. Other
# of groups	77	59	43	21	20	18	17	107
Proportion of total (%)	21.10	16.16	11.78	5.75	5.48	4.93	4.66	29.32

Sixty-two sturgeon were reported captured in 2001, 57 of which were kept (Table 6). All sturgeon reported as kept were observed by the study surveyor. The mean catch was 0.17 sturgeon per fisher. Angler catch-per-unit-effort was 0.0002 sturgeon/angler/hour. The majority of sturgeon (59) were captured and harvested by anglers (Table 6). Sturgeon captures were primarily reported from Sloop's Camp (n=24), followed by Rick's Camp (n=14) and Sangedor's (n=12).

Table 6. Sturgeon catch and harvest information from The Pas, 2001.

	Anglers	Domestic net	Total
# Fishers	364	1	365
Total caught	59	3	62
Caught/Fisher	0.16	3.00	0.17
Total Kept	54	3	57
Kept/Fisher	0.15	3.00	0.16

Of the 62 sturgeon captured, 43 sturgeon were measured to the nearest cm. Lengths of 40 sturgeon that were kept ranged from 51 to 168 cm, and had a mean of 86 cm. Lengths of three sturgeon that were released ranged from 31 to 142 cm and had a mean of 80 cm. Estimated weights of 38 sturgeon that were kept ranged from 2.3 to 39.9 kg and had a mean of 9.6 kg. Weights estimated for three sturgeon that were released ranged from 3.2 to 20.4 kg and had a mean of 9.4 kg. More than 80% of the sturgeon measured and for which weights were estimated were less than 100 cm in length and 16 kg in weight (Figures 1 and 2). Approximately 60% of the sturgeon kept were estimated to be less than 8 kg (17.6 lbs) (Figure 2). A comparison of estimated weights to a lake sturgeon weight-length relationship provided in Harkness & Dymond (1961) suggests that the majority of sturgeon weights reported at The Pas in 2001 were overestimated. However, approximately 84% of the estimated weights were within 2.3 kg (5 lbs) of the curve.

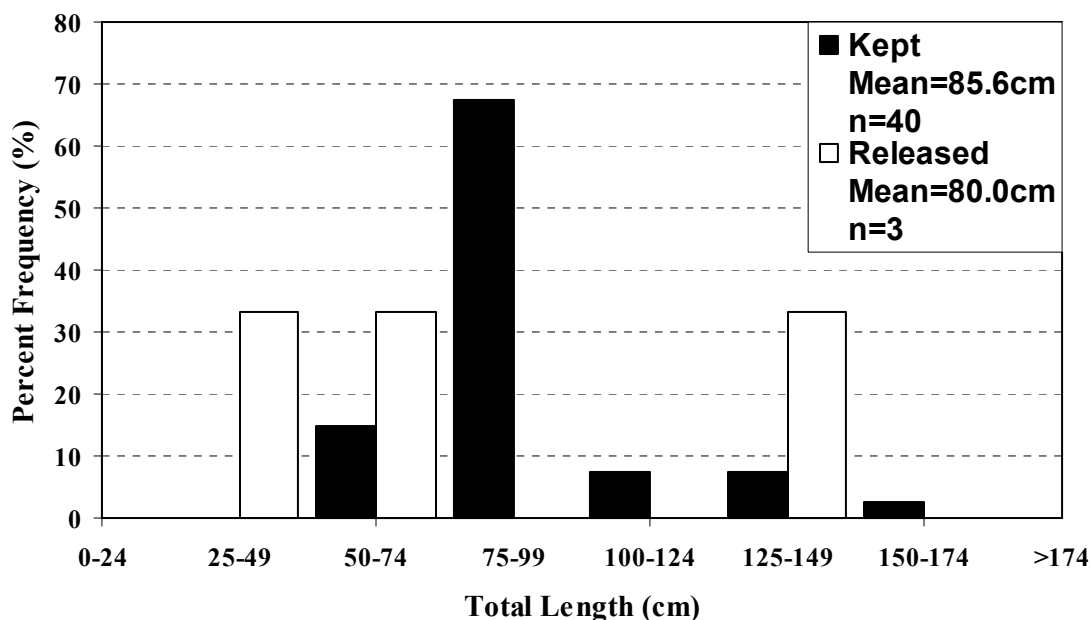


Figure 1. Length-frequency distribution of Saskatchewan River sturgeon kept and released near The Pas, 2001.

The majority of sturgeon (48%) were reported captured from July 21-29. Only 5 (8%) were reported captured during June (Figure 3).

A total 329 fish of other species, primarily walleye (*Stizostedion vitreum*) and northern pike (*Esox lucius*), were reported captured by those interviewed. Of those, 120 fish (36%) were reported as kept. Catch-per-unit-effort was 0.001 fish (other than sturgeon)/angler/hour.

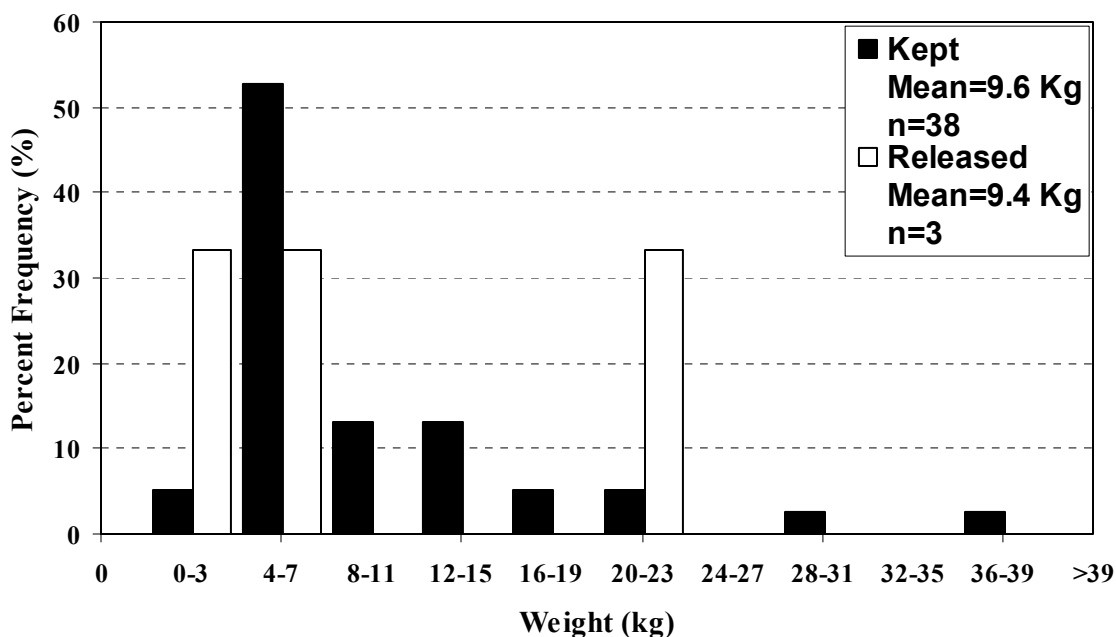


Figure 2. Weight-frequency distribution of Saskatchewan River sturgeon kept and released near The Pas, 2001.

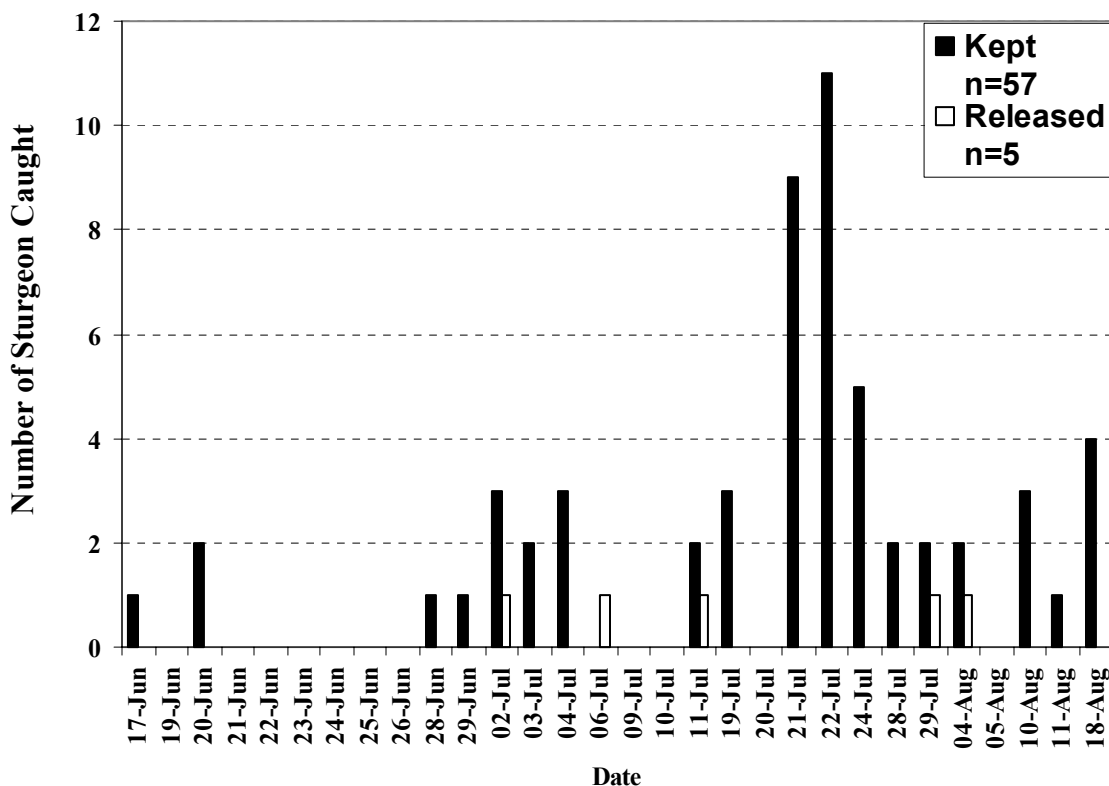


Figure 3. Daily catch of Saskatchewan River sturgeon near The Pas, 2001.

An estimate of the total harvest of sturgeon at The Pas from June 1 to August 31, 2001, can be calculated by: 1) extrapolating observed catches by the hours remaining to be fished each day to provide an estimated total catch for each day surveyed; and, 2) using the average daily catch on each day to estimate harvests on each day that was not surveyed. Adding the extrapolated harvests on survey days to the estimated harvests on days that were not surveyed yields an estimate of the total harvest at The Pas in 2001 of 302 sturgeon (Table 7). It should be noted that because sampling methodology was not well documented at The Pas in 2001, the extrapolated estimate of total harvest should be viewed with caution.

Table 7. Extrapolated estimate of total sturgeon harvested from the Manitoba side of the Saskatchewan River near The Pas, 2001.

Day of week	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
Observed harvest	3	7	7	4	4	18	14	
Hours fished	58	98	156	52.5	162	201	181.5	
# Anglers	24	44	51	24	57	76	88	
KPUE*	0.0022	0.0016	0.0009	0.0032	0.0004	0.0012	0.0009	
Hours to be fished	47	93	84.5	40	136	177.5	211	
Estimated harvest during hours still to be fished (hours to be fished x # anglers x KPUE)	2.43	6.64	3.79	3.05	3.36	15.90	16.28	
Estimated harvest on survey days	5.43	13.64	10.79	7.05	7.36	33.90	30.28	
# Days surveyed (Jun 01-Aug 31)	3	5	3	3	5	7	5	
# fish harvested/day	1.81	2.73	3.60	2.35	1.47	4.84	6.06	
# days missed (Jun 01-Aug 31)	10	8	10	10	8	7	8	
Estimated harvest on missed days	18.10	21.83	35.97	23.49	11.77	33.90	48.44	
Total estimated harvest/day of week (Jun 01-Aug 31)	23.53	35.47	46.76	30.54	19.13	67.79	78.72	
Total estimated summer harvest (Jun 01-Aug 31)							301.95	

* KPUE = # sturgeon kept/hour/angler

2.2.2 Household Survey

All fifteen households interviewed in 2001 had at least one OCN member and one sturgeon fisher as an occupant. The average number of sturgeon fishers in each household interviewed was 3.3.

Twelve of the households were actively fishing for sturgeon in 2001 and 2000, and eight households fished for sturgeon in 1999. Five of the households were recorded as being anglers and two as gill net fishers, while fishing type for the other eight households was not reported.

The total reported catch of sturgeon by the households interviewed was 25 in 1999, 58 in 2000, and 33 in 2001 (Table 8). The average number of sturgeon captured by households fishing for sturgeon was 2.75 in 2001, 4 in 2000, and 3.13 in 1999. All sturgeon reported captured in 1999 and 2001 were kept. Seventeen percent of sturgeon reported captured in 2002 were released. It is unknown if fishermen interviewed for the household surveys were also interviewed during the river survey.

Table 8. Sturgeon harvest information from household surveys at The Pas, 2001.

	Sturgeon Harvest					
	2001		2000		1999	
	Caught	Kept	Caught	Kept	Caught	Kept
Total	33	33	58	48	25	25
# of households fishing	12	12	12	12	8	8
Average/household	2.75	2.75	4.83	4.00	3.13	3.13

2.3 Summary

A total of 57 lake sturgeon were observed captured from the Saskatchewan River near The Pas from June 17 to August 18, 2001. All were taken by First Nations fishers. Angler catch-per-unit-effort was 0.0002 sturgeon/angler/hour. More than 80% of the sturgeon measured and for which weights were estimated were less than 100 cm in length and 16 kg in weight. Approximately 60% of the sturgeon had weights estimated at less than 8 kg (17.6 lbs). It is clear that a large proportion of the sturgeon harvested are from a portion of the population for which little is known (i.e., they are not included in the SRSMB population estimate which only includes fish over 8 kg). How this harvest will affect the number of sturgeon recruited into the spawning population in the future is unknown.

The observed harvest of sturgeon 8 kg and over (23 fish) amounts to approximately 1.8% of the SRSMB population estimate for sturgeon 8 kg and over (~1300 sturgeon, R. Wallace, Saskatchewan Environment, Saskatoon, SK, pers. comm.). The extrapolated harvest of sturgeon 8 kg and over (40% of 302 or 121 sturgeon) amounts to over 9% of the population estimate. Such a harvest is clearly unsustainable, especially considering it also includes an even larger number of fish that are not included in the population estimate. However, it should be noted that because methodology was not well documented in 2001, extrapolated estimates should be viewed with caution.

The household surveys indicated that at least as many sturgeon were harvested in 2000 (n=58) as were observed harvested from the river in 2001 (n=57). The households surveyed reported similar harvests in 1999 (n=25) and 2001 (n=33) suggesting that the harvest in 1999 was also similar to 2000 and 2001.

3.0 THE PAS 2002

The objectives of the harvest survey conducted at The Pas in 2002 were:

- to supplement data collected in 2001 and provide a better understanding of harvests; and,
- to improve on the methodology employed in 2001 such that a more accurate estimate of the total number of sturgeon harvested from the Saskatchewan River between the Manitoba/Saskatchewan border and the mouth of the Summerberry River, Manitoba could be obtained.

A local individual hired by OCN conducted the study. An individual from North/South Consultants Inc. conducted two days of on-site training.

3.1 Methods

The 2002 Saskatchewan River harvest study at The Pas was to be conducted from June 6 to August 31, 2002 and was to be comprised of two components: a river survey stratified by weekday; and, camp surveys. The river surveys were focused on being on the river when harvests were occurring to allow for the harvest to be sampled. The survey was to be conducted by boat and was to include the area between Sangedor's Cutoff and the mouth of the Summerberry River. Sampling was to occur on approximately 12 days per month evenly distributed to incorporate weekend and weekday surveys. All fishers encountered, both on shore and on the water were to be interviewed. A survey form was to be filled out for each individual fisher within each group. Sampling times were to be varied throughout the day. The camp survey was to include regular visits (once every two to three weeks) to camps outside the study area known to harvest sturgeon. Information collected during both components of the study was similar to the 2001 survey with the following additions:

- Was the fisher interviewed previously in the current year?
- How many sturgeon were captured and kept since the last interview?
- How were kept sturgeon used?
- Where were sturgeon captured?

Examples of survey questionnaires are provided in Appendix 3. Data collected by the project surveyor was to be photocopied and sent to North/South Consultants Inc. on a bi-weekly basis. The data were collated and analyzed as described for the 2001 study.

3.2 Results and Discussion

Surveys were conducted on the Saskatchewan River on 28 days from June 6 to September 25, 2002. Surveying occurred on 11 days in each of June and July, and three days in each of August and September. Twenty-five interviews were conducted in June, 30 in July, eight in August and three in September (Table 9). June and July surveys were only conducted from Thursday to Sunday, August surveys were conducted from Friday to Sunday, and September surveys were conducted from Monday to Wednesday (Table 9). Total daily surveys ranged from one on each of Monday to Wednesday to 22 surveys on Fridays. Surveys were conducted at a variety of times between 10 am and 11 pm. Survey questionnaires were completed for groups of fishermen rather than for individual fishermen.

Table 9. The number of daily sturgeon harvest interviews conducted at The Pas in 2002.

Date*	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
June	0	0	0	5	9	4	7	25
July	0	0	0	3	11	9	7	30
August	0	0	0	0	2	3	3	8
September	1	1	1	0	0	0	0	3
Total	1	1	1	8	22	16	17	66

* June-August surveys were conducted exclusively with anglers, September surveys were conducted with commercial fishers

A total of 66 groups, comprised of 199 fishers, were interviewed during the study (Table 10). Of those interviewed, 135 (68%) were First Nations members and 64 (32%) were non-First Nations fishers (Table 10). One survey form was filled out for a fishing derby of 60 individuals at The Pas on June 15. Excluding this group, the average group size interviewed was 2.15 fishers. Of the interviews conducted, 133 fishers in 62 groups were anglers and 6 fishers in 3 groups were commercial fishermen.

At least 118 (59%) of the 199 surveyed fishers interviewed were listed as OCN residents. Three large groups (≥ 3 fishers) were reported to include residents from different communities; however, the exact numbers of fishers from each community was not recorded. Sixty-two (31%) fishers were reported as residing in The Pas, including the 60 fishers participating in the fishing derby. The remaining interviews were conducted with residents of Moose Lake (at least 5), Grand Rapids (at least 4), Alberta (2), Qu'appelle Valley (1) and Cumberland House (1). All harvested sturgeon were reported by groups with at least one OCN resident.

Excluding the two-day fishing derby, a total of 369.5 hours of fishing were reported by individual fishers or an average of 2.8 hours per fisher per day. An additional 406 hours, or 3.1 hours per fisher, were expected to be fished on survey days following the interviews (Table 11).

Table 10. The number and types of fishers interviewed at The Pas, 2002. The derby fishers were all anglers, but were kept separate for analysis.

	Number in Group	First Nation Fishers	Non-First Nation Fishers	Anglers	Domestic Net Fishers	Commercial Net Fishers	Fishing derby
# Fishers	139	135	4	133	0	6	60
# Groups	66	63	2	62	0	3	1
Fishers/group	3.02	2.14	2.00	2.15	0.00	2.00	60.00

Table 11. Number of hours fished by anglers and by derby fishers prior to being interviewed and the estimated additional time to be fished post-interview on survey days in The Pas, 2002.

	Time already Fished	Time remaining to be Fished	Fishing Derby Already Fished	Fishing Derby to be Fished
Hours fished	369.5	406	240.00	240.0
# of anglers	133	133	60.00	60.00
# of angler groups	62	62	1.00	1.00
Hours fished/angler	2.78	3.05	4.00	4.00
Hours fished/group	5.96	6.55	240.00	240.00

Excluding the derby, 42 interviews were conducted in boats and 23 were conducted on shore (Table 12). The mean number of fishers in a boat was 2.2, while the mean number of fishers in shore-based groups was 2.0.

Table 12. The number of boat and shore interviews (excluding the fishing derby) conducted at The Pas, 2002.

Location	Anglers	Commercial	First Nation	Non-First Nation
Boats	42	3	45	0
Shore	23	0	21	2

Interviews were conducted most frequently at Moose Park (18.2% of groups surveyed), Sangedor's (10.6%), Reeder's Cut-off (9.1%), Cook's Island (9.1%), Big Bend (7.6%) and Rall's Island (7.6%) (Table 13).

Table 13. Fishing sites on the Saskatchewan River used by groups fishing near The Pas, 2002.

	Moose Park	Sangedor's	Reeder's Cut-off	Cook's Island	Rall's Island	Big Bend	Misc. Other
# of groups	12	7	6	6	5	5	25
Proportion of total (%)	18.18	10.61	9.09	9.09	7.58	7.58	37.88

Forty-nine sturgeon were reported as captured in 2002, 26 of which were kept (Table 14). Forty sturgeon were caught by anglers, eight by commercial net fishers, and one by the fishing derby contestants. Of the 26 sturgeon that were kept, 12 were captured on survey days, and 14 were captured prior to, or in between, surveys. The mean catch was 0.25

sturgeon per fisher (Table 14). Angler catch-per-unit-effort was 0.0005 sturgeon/angler/hour. All harvested sturgeon were reported by First Nation fishers.

Table 14. Sturgeon catch and harvest information from The Pas, 2002.

	Anglers	Commercial Net Fisher	Derby	Total
# Fishers	133	6	60	199
Total fish caught	40	8	1	49
Caught/Fisher	0.30	1.33	0.02	0.25
Total Kept	23	3	0	26
# Kept/Fisher	0.17	0.50	0.00	0.13
# Kept on survey days	9	3	0	12
# Kept between survey days	14	0	0	14

Stratification of survey days was insufficient to allow for an accurate extrapolation of the total harvest. Only 11 of 66 interviews were conducted in August and September and only 3 were conducted from Monday to Wednesday. However, a rough estimate of the total harvest can be derived from observed harvests (12 sturgeon on 29 survey days). By extrapolating the catch to include hours remaining to be fished and assuming a similar level of harvest for non-surveyed days, the total harvest from June 1 to September 30 can be estimated at 106 sturgeon (Table 15). It should be noted that the proposed harvest survey methodologies were not adhered to and, therefore, the extrapolated estimate should be viewed with caution.

Table 15. Extrapolated estimate of total sturgeon harvested from the Manitoba side of the Saskatchewan River near The Pas, 2002.

KPUE*	0.00024
Estimated harvest during hours still to be fished (hours to be fished x # anglers x KPUE)	13.19
Observed harvest on survey days	12
Estimated harvest on survey days	25.19
# days surveyed (Jun 01-Sept 30)	29
# fish harvested/day	0.87
# days missed (Jun 01-Sept 30)	93
Estimated harvest on missed days	80.77
Total estimated harvest (Jun 01-Sept 30)	105.95

* KPUE = # sturgeon kept/hour/angler

Lengths reported for 11 of the 26 sturgeon reported as captured and kept ranged from 43-96 cm and had an average of 62 cm. Lengths reported for 13 sturgeon that were released

ranged from 31-91 cm and averaged 55 cm. Weights were not estimated for sturgeon harvested in 2002. More than 70% of the sturgeon observed harvested were within the 50-74 cm length interval (Figure 4).

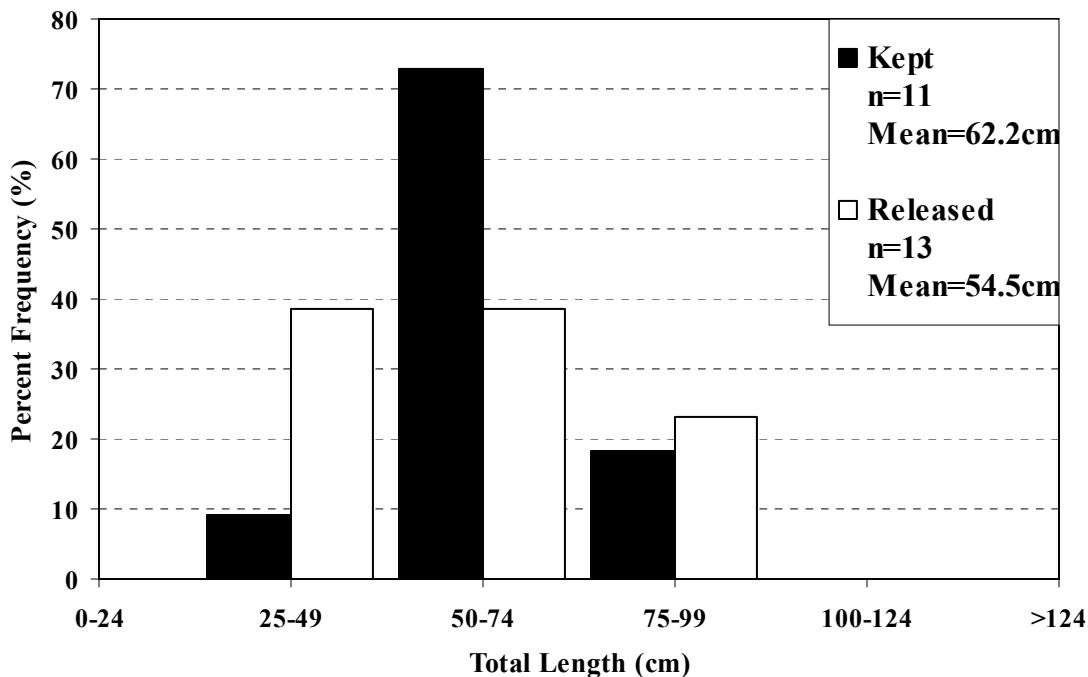


Figure 4. Length-frequency distribution of Saskatchewan River sturgeon kept and released near The Pas, 2002.

The majority of sturgeon reported captured were taken during early June and late September (Figure 5).

At least 70 walleye were reported captured during the survey but numbers kept and released are unknown. Unspecified numbers of goldeye and burbot were also caught on survey days.

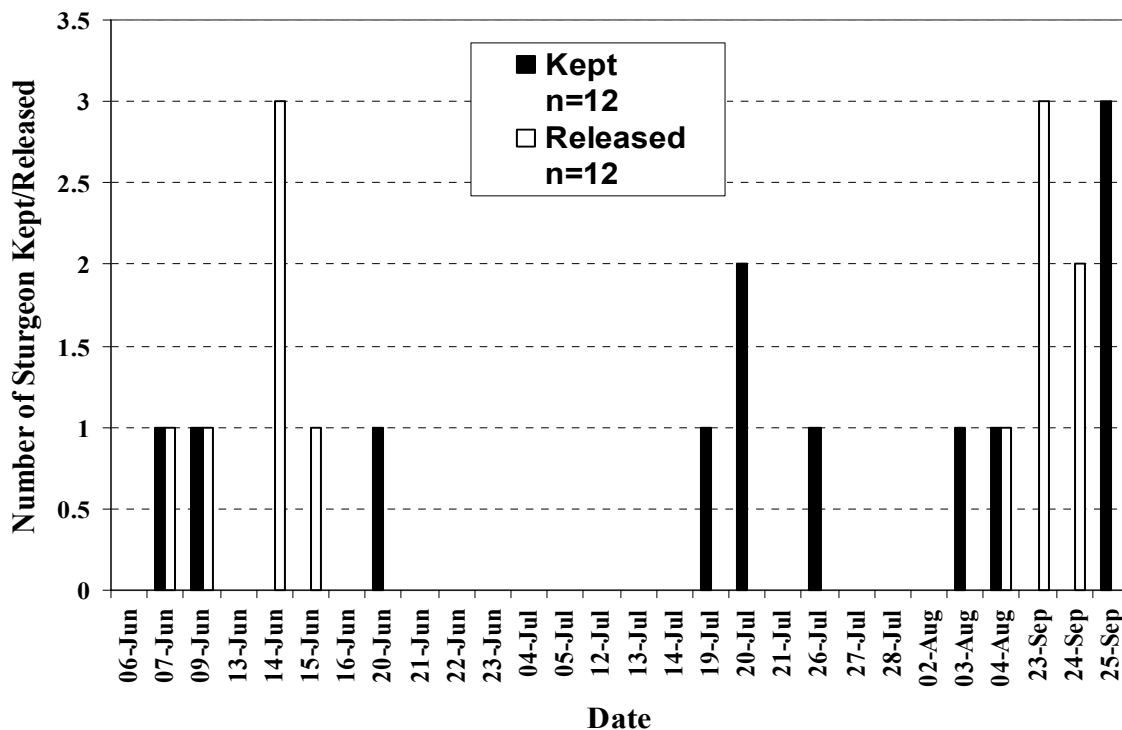


Figure 5. Daily catch of sturgeon from the Saskatchewan River near The Pas, June 6-September 25, 2002. The captures illustrated include only those sturgeon reported captured on survey days. Sturgeon reported captured between interviews are not illustrated.

3.3 Summary

A total of 49 lake sturgeon were reported captured from the Saskatchewan River from Sangedor's to the mouth of the Summerberry River from June 6 to September 25, 2002. Twenty-six sturgeon were reported as kept. Based on the observed catch on the days surveyed, and the time remaining to be fished those days, a total of 106 sturgeon were estimated to have been harvested from June 1 to September 30. Lengths of 11 sturgeon reported as kept ranged from 43-96 cm and averaged 62 cm. Mean length of kept sturgeon that were measured in 2002 was 28% smaller than kept sturgeon measured in 2001. Forty-seven percent of sturgeon captured were released in 2002 compared to just 8% in 2001.

4.0 CUMBERLAND HOUSE 2002

The objective of the harvest survey conducted at Cumberland House in 2002 was to estimate the number and size of sturgeon harvested from the Saskatchewan River between the mouth of the Torch River, SK and the Manitoba/Saskatchewan border from June 1 to September 30. An individual from Cumberland House, recommended by the Cumberland House Fishermen's Coop, was hired by North/South Consultants Inc. to conduct the study. North/South Consultants Inc. conducted one day of on-site training.

4.1 Methods

The Cumberland House survey focused on harvest-recall rather than sampling actual harvests. Boat surveys were to be conducted along the Saskatchewan River from the mouth of the Torch River to the Manitoba/Saskatchewan border. Surveys were to be conducted in three-day segments with each day incorporating a different reach of the study area. The three reaches to be surveyed were Big Stone Rapids to the Manitoba/Saskatchewan border, Big Stone Cut-off to the Torch River, and the lower Mossy River/Cumberland Lake area. Sampling was to be evenly spaced through June, July, August, and September and occur on different weekdays on successive sampling periods. All individuals encountered on the river and those in known fish camps were to be interviewed. An example of the survey questionnaire is provided in Appendix 4.

Completed survey questionnaires were to be faxed to North/South Consultants Inc. on a bi-weekly basis. Survey data were compiled and analyzed similar to survey data collected at The Pas.

4.2 Results and Discussion

Surveying was conducted on 24 days from June 23 to September 25, 2002, including three days in June, nine in July, three in August, and nine in September. Five survey questionnaires were completed in June, 19 in July, 9 in August and 24 in September (Table 14). Domestic net fishers (most participating in the index-fishing program) comprised the majority of the groups interviewed in every month, with the exception of September when anglers were most frequently interviewed. Interviews were conducted on every day of the week ranging from two on Mondays to 13 on Saturdays (Table 16).

A total of 58 interviews with groups or individuals were conducted during the study (Table 17). The interviews included 147 individual fishermen. Excluding two surveys of fishing derbies, interviews included 89 First Nations fishers (77%) and 27 non-First Nations fishers (23%). There was an average of 2.0 fishers/group excluding the derby interviews. Several groups of 6 or more American tourists were interviewed. Interviews were comprised of 76 anglers in 30 groups, 38 domestic fishers in 27 groups (including index fishermen working for the SRSMB), two commercial fishers in one group, and 31 derby fishers in two groups. Because fishermen were not identified by name, it was not possible to determine how many individual fishermen were interviewed on more than one occasion.

One hundred forty-seven individual fishers were encountered, including 114 (78%) from Cumberland House, 18 from Minnesota, four from The Pas, two from California, two from South Carolina, two from Gillam, MB, two from Red Earth, SK, one from Carrot River, SK, and one from Cape Breton, NS. Five sturgeon were harvested by residents of The Pas, and 12 by residents of Cumberland House.

Table 16. The number of daily sturgeon harvest interviews conducted at Cumberland House in 2002.

Date	Fisher Type	Mon	Tue	Wed	Thu	Fri	Sat	Sun*	Total
June	Anglers	0	0	0	0	0	0	0	0
	Domestic net	0	2	0	0	3	0	0	5
July	Anglers	1	0	1	1	0	4	1	8
	Domestic net	1	1	1	4	2	2	0	11
August	Anglers	0	0	0	0	0	3	0	3
	Domestic net	0	0	0	3	0	1	2	6
September	Anglers	0	5	6	0	2	2	4	19
	Domestic net	0	1	3	0	0	1	0	5
Total		2	9	11	8	7	13	7	57

* A single commercial fisher group was surveyed on a Sunday in June

Table 17. The number and types of fishers interviewed at Cumberland House, 2002. The derby fishers were all anglers but were kept separate for analysis.

	Number in Group	First Nation Fishers	Non-First Nation Fishers	Anglers	Domestic Net Fishers	Commercial Fishers	Fishing derby
# Fishers	147	89	27	76	38	2	31
# Groups	58	51	8	30	27	1	2
Fishers/group	2.53	1.75	3.38	2.53	1.41	2.00	15.50

Excluding fishing derby interviews, a total of 202 hours, or an average of 2.7 hours per fishermen were reported as fished by anglers on the day of the surveys (Table 18). An additional 326.5 hours, or 4.3 hours per fisher were expected to be fished on survey days following the interviews.

Table 18. Number of hours fished by anglers and by derby fishers prior to being interviewed and the estimated additional time to be fished post-interview on survey days in Cumberland House, 2002.

	Time already Fished	Time remaining to be Fished	Fishing Derby Already Fished	Fishing Derby to be Fished
Hours fished	202	326.5	310.00	0.0
# of anglers	76	76	31.00	31.00
# of angler groups	30	30	2.00	2.00
Hours fished/angler	2.66	4.30	10.00	0.00
Hours fished/group	6.73	10.88	155.00	0.00

Excluding the fishing derbies, 22 interviews targeted groups in boats (with an average of 2.0 fishers per boat), one interview of a single domestic fisher was conducted on shore, two interviews were conducted at fish camps (with an average of 8.0 fishers per camp survey), and 9 interviews reported multiple positions (shore and boat, with an average of 2.2 fishers per group) (Table 19). Interviews were most frequently conducted at Cumberland Lake (17.2% of groups surveyed), Carriere's Camp on the Mossy River (8.6%), Central Angling River (8.6%), Tearing River outlet (6.9%), and Windy Lake on the Mossy River (5.2%) (Table 20). All Mossy River sites combined represent 29% of the interviews conducted.

Table 19. The number of boat, shore, camp and multiple location interviews (excluding fishing derby surveys) conducted at Cumberland House, 2002.

Location	Anglers	Commercial	Domestic	First Nation	Non-First Nation
Boats	22	1	21	42	5
Shore	0	0	1	1	0
Camp	2	0	0	0	2
Multiple	4	0	5	8	2

Table 20. Fishing sites on the Saskatchewan River used by groups fishing near Cumberland House, 2002.

	Cumberland Lake	Central Angling R.	Carriere's Camp on Mossy R.	Tearing R. outlet to Sask. R.	Windy L. on Mossy R.	Misc. Other
# of groups	10	5	5	4	3	31
Proportion of total (%)	17.24	8.62	8.62	6.90	5.17	53.45

Excluding sturgeon passed on to the SRSMB by index-fishers, 21 sturgeon were reported captured on the survey days in 2002, 17 of which were kept (Table 21). Angler catch-per-unit-effort was 0.0004 sturgeon/angler/hour. Fifteen sturgeon were reported as kept on survey days and two were reported as kept between survey days. The actual date fish were captured may be somewhat skewed toward survey days because fishermen often tether sturgeon to shore for a period of time after capture. The majority of sturgeon were harvested by domestic net fishers (Table 21). Five of the six sturgeon reported harvested by anglers were taken on the same day by a single group of four fishers from The Pas, MB. Index fishers reported catching a large number of sturgeon that were also reported to the SRSMB and released (Appendix 5). These fish have been excluded from the harvest analysis.

Table 21. Sturgeon catch and harvest information from Cumberland House, 2002.

	Anglers	Commercial Net Fishers	Domestic Net Fishers	Derby Fishers	Total
# Fishers	76	2	38	31	147
Total fish caught	6	0	15	0	21
Caught/Fisher	0.08	0.00	0.39	0.00	0.14
Total Kept	6	0	11	0	17
# Kept/Fisher	0.08	0.00	0.29	0.00	0.12
# Kept on survey days	6	0	9	0	15
# Kept between survey days	0	0	2	0	2

Only two harvested sturgeon were measured for length (86 and 158 cm). Weights were estimated for 12 sturgeon harvested and ranged from 4.5-30.9 kg, and had a mean of 10.9 kg. In contrast to the domestic harvest at The Pas, only two sturgeon (17%) were estimated to be less than 8 kg (Figure 6).

The majority of sturgeon (68%) were observed to be captured in June and July (Figure 7).

4.3 Summary

Excluding fish turned over to the index-fishing program, a total of 21 lake sturgeon were reported as captured from the Saskatchewan River from the mouth of the Torch River to the Manitoba/Saskatchewan border from June 23 to September 25, 2002. Four sturgeon were released, resulting in a reported harvest of 17. Weights were estimated for 12 of the sturgeon harvested and ranged from 4.5-30.9 kg, and had a mean of 10.9 kg. The mean estimated weight of sturgeon harvested at Cumberland House in 2002 was 27% higher than the mean estimated weight of sturgeon harvested at The Pas in 2001.

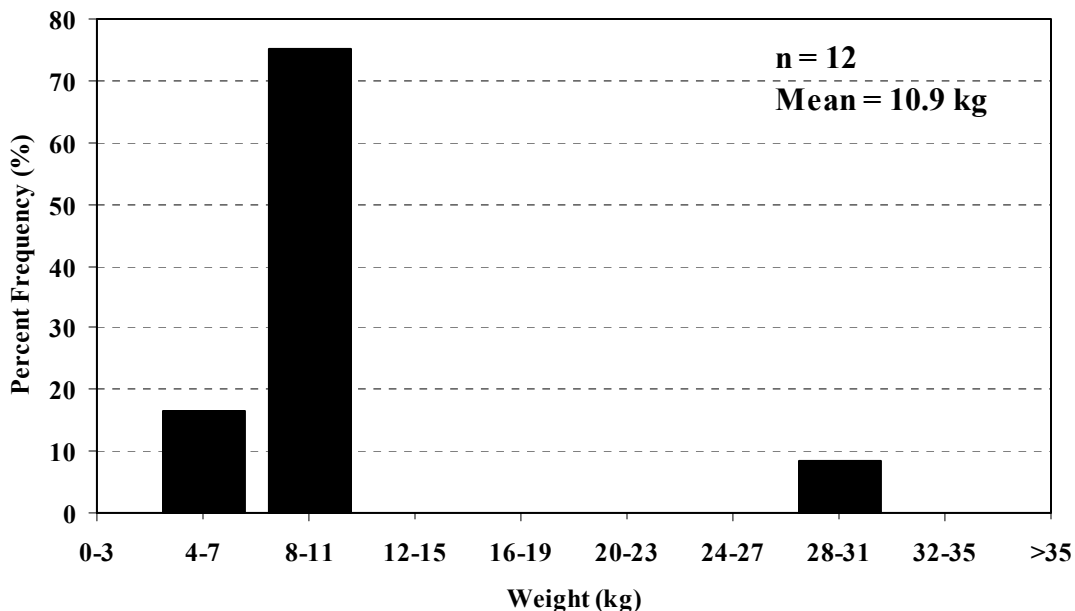


Figure 6. Weight-frequency distribution of Saskatchewan River sturgeon harvested near Cumberland House, 2002.

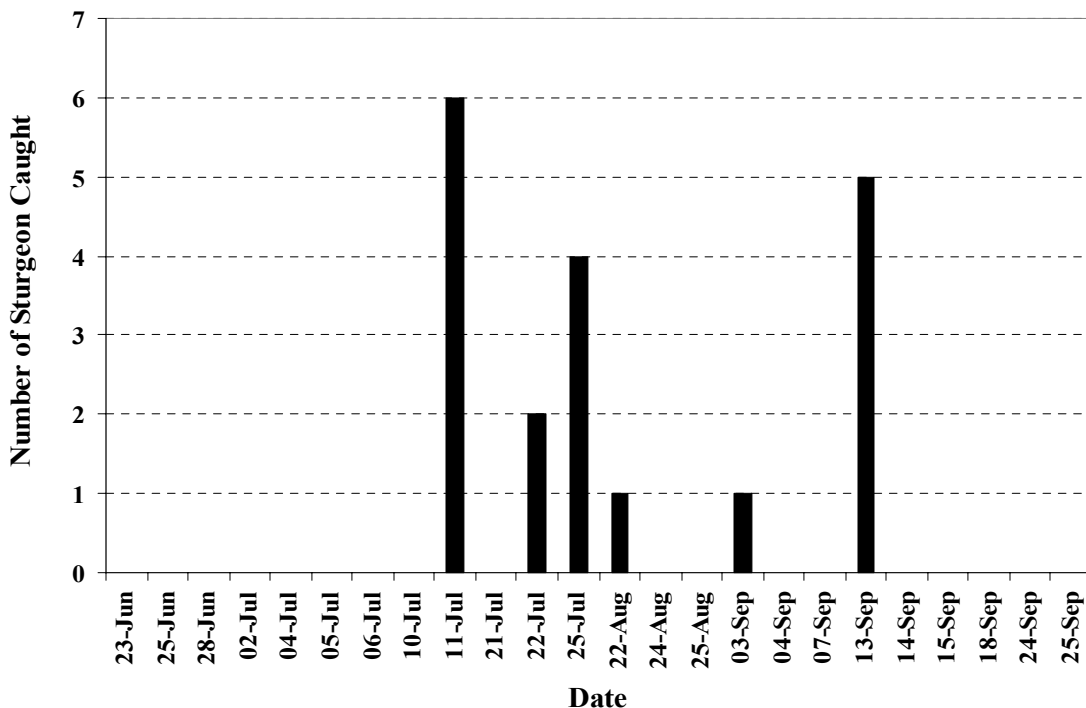


Figure 7. Observed daily catch of sturgeon from the Saskatchewan River near Cumberland House, 2002.

The harvest survey results indicate that a minimum of 17 sturgeon were harvested from the Saskatchewan River near Cumberland House in 2002. Considering it is probable that not all fishermen catching sturgeon were interviewed and not all fishermen were interviewed at the end of the season in September, it can be assumed that the actual harvest was much higher. The survey methods employed during the 2002 study did not allow for calculation of a reasonable estimate of the total harvest.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Harvest survey observations indicated that, at a minimum, 57 lake sturgeon were harvested from the Saskatchewan River in the vicinity of The Pas in 2001. Based on the observed harvests, the hours remaining to be fished on the survey days, and the number of days not surveyed, it was estimated that the total harvest from June 1 to August 31 was 302 sturgeon. However, because sampling effort was not well documented during the survey, the estimated harvest is somewhat dubious. The goal in 2002 was to improve survey methodology and provide a more accurate estimate of sturgeon harvest from both Manitoba and Saskatchewan.

The 2002 harvest surveys documented an observed or reported harvest of 26 sturgeon at The Pas and 17 sturgeon at Cumberland House. Extrapolation of the harvest at The Pas yielded a total estimated harvest of 106 sturgeon from June 1 to September 30. However, inconsistencies in data collection again reduced the validity of the estimated harvest at The Pas and precluded an estimation of the total harvest at Cumberland House. Of particular significance were:

- important harvest information from days between surveys was inconsistently, and sometimes inaccurately, recorded;
- interviews were conducted by group rather than by individual, and therefore captures between interviews could not be accurately recorded;
- poor stratification of survey days;
- inconsistencies in the method that data were recorded from one interview to another; and,
- inconsistencies in the number of fish recorded as caught and kept.

Surveys conducted in 2001 and 2002 suggested that the harvest of lake sturgeon in the vicinity of The Pas was at least 50-60 fish annually from 1999-2002 and may have been in excess of 302 annually as suggested by extrapolation of the 2001 results. The harvests were also comprised primarily of fish less than 8 kg (60%). The 2002 survey at Cumberland House suggested that a minimum of 17 lake sturgeon, and presumably more, were harvested from the Saskatchewan River between E.B. Campbell Dam and the Manitoba border, and approximately 17% of those were under 8 kg. Based on these data (i.e., addition of the minimum annual harvests from The Pas and Cumberland House), it can be assumed that in recent years at least 74 and as many as 319 sturgeon have been removed from the population between E.B. Campbell Dam and Grand Rapids Dam on an

annual basis, of which at least 50% (based on 60% of 57 sturgeon from The Pas plus 17% of 17 sturgeon from Cumberland House) were less than 8 kg. It is interesting to note that CPUE for sturgeon was similar for all three studies ranging from 0.0002-0.0005 sturgeon/angler/hour fished. All sturgeon harvested were taken by groups with at least one First Nations fisher.

The 37 lake sturgeon 8 kg and over that were known to be harvested at both The Pas (40% of 57 in 2001) and at Cumberland House (83% of 17 in 2002) amount to approximately 2.8% of the estimated population of sturgeon 8 kg and over in this reach of the river (1300 fish, R.Wallace, SE, Saskatoon, pers. comm.). Extrapolated harvest estimates suggest that the harvest may be as high as 160 sturgeon 8 kg and over (50% of 332) annually, which is 12.3% of the population estimate. While the known harvest level (observed or reported) is within what is considered a safe harvest level for lake sturgeon by most management agencies (5%), the estimated harvest level is clearly unsustainable. Of possibly greater concern is that an equal number of sturgeon less than 8 kg in weight are also being harvested from a segment of the population for which there is no information on abundance. Using current SRSMB monitoring techniques, the effect of these harvests on the sturgeon population will not become apparent for a number of years. In the face of this uncertainty, the SRSMB should direct effort to prevent domestic harvests from increasing and encourage a voluntary reduction. The harvests documented by the harvest surveys also serve to underline the importance of modifying the SRSMB monitoring program such that population estimates can be expanded to include all sturgeon targeted by the domestic fishery. Until this is done, it will be difficult to assess how harvesting fish less than 8 kg will affect the population in the long term.

The data collected by the 2001 and 2002 surveys provides the SRSMB with a preliminary understanding of sturgeon harvests from the Saskatchewan River, but is insufficient to provide a clear understanding of the sustainability of the current harvest. Collecting harvest data in the same manner in the future will probably not provide any better understanding of current harvest levels. If the Board desires to increase the level of precision of harvest estimates, alternative data collection methods should be considered and implemented.

A possible alternative method of monitoring harvests that is relatively inexpensive is a "harvest calendar". Harvest calendars are distributed to all known users of a resource, who are expected to record harvesting activity and harvests on the calendar on a daily basis. To increase participation, prizes can be offered for submitting completed calendars. The Board may also consider striking up a partnership with the Keewatin Community College Natural Resources Technology Program, which may be able to supply students to conduct harvest surveys and supervision for data collection and report preparation.

Regardless of the method chosen for future studies, the Board should try to maximize the likelihood that data are collected in a manner that will allow for a reasonably accurate estimate of the total harvest. This means that not only should the sampling methodology be designed to collect the appropriate information according to an appropriate sampling

regime, but also that the methodology be adhered to in the field and the data are recorded in an accurate and consistent manner.

**Appendix 1. Sample questionnaire for the Saskatchewan River Lake Sturgeon
Harvest Study river survey at The Pas, 2001.**

SASKATCHEWAN RIVER STURGEON HARVEST SURVEY 2001

Date (year/month/day) _____ Time _____

Location _____

Domestic or Commercial Net Fishers:

Number of fishers: First Nation _____ and/or non-First Nation _____

Number of Net Set Locations _____ Total Length (yards) _____

Mesh Size (inches) _____

Number of Nights Fished _____ (since last interview)

Anglers: Number in Group _____ Boat or Shore _____

Number of fishers: First Nation _____ and/or non-First Nation _____

Hours Fished Today _____ Additional Hours to be Fished Today
(to time of interview) (estimate) _____

Number of Sturgeon:

Caught _____ Kept _____ Were All Others Released? _____

Sturgeon:	Total Length (cm or inches)	Estimated Weight (kg or pounds)	Tag #
#1	_____	_____	_____
#2	_____	_____	_____
#3	_____	_____	_____

Species and Numbers of Other Fish Caught and Kept _____

Who gets the sturgeon you kept? _____

What do you do with sturgeon you keep? _____

Comments _____

**Appendix 2. Sample questionnaire for the Saskatchewan River Lake Sturgeon
Harvest Study household survey at The Pas, 2001.**

Household Survey

- 1) Date (year/month/day) _____
- 2) Household was chosen: Randomly _____ or Known sturgeon fisher _____
- 3) Location of household: OCN _____, The Pas _____, or Rural area (name) _____
- 4) Fishing effort & catch for this household:

	This Year Todate	Last Year	Previous
i) Any fishing for sturgeon (Yes/No) _____	_____	_____	_____
ii) How many people fished? _____	_____	_____	_____
iii) Number First Nations and non-First Nations? _____	_____	_____	_____
iv) Number of sturgeon: caught ? _____	_____	_____	_____
kept (i.e. not released) ? _____	_____	_____	_____

- 5) How many people in this household have been interviewed this year:
On the river? _____, and/or On shore ? _____
- 6) Who gets the sturgeon which are kept by fishers in this household? _____

- 7) What do you do with the sturgeon ? _____

- 8) Comments and additional questions:

Appendix 3. Sample questionnaires for the Saskatchewan River Lake Sturgeon Harvest Study river survey at The Pas, 2002.

SASKATCHEWAN RIVER STURGEON CREEL SURVEY

Date (month, day): _____

Time: _____

Location: _____

Shore _____ Boat _____

Angler _____ Domestic Net Fisher _____ Commercial Fisher _____

Number in Group: _____

Approached: Yes _____ No _____

TODAY

Resident of: _____

Treaty: Yes _____ No _____

Number of nets (hooks) _____ Length _____ Mesh Size _____

Hours Fished: _____

How much longer will you fish today? _____

Are you fishing for sturgeon? Yes _____ No _____

Number of Sturgeon Captured Today: _____

Number of Sturgeon Kept Today: _____

Where were the sturgeon captured? _____

How many were tagged? _____

Tag Numbers: _____

Length of Sturgeon Kept (total length in cm): _____

PRIOR TO TODAY

Have you been interviewed before? Yes _____ No _____

When? _____

Other than the sturgeon above, how many sturgeon have you (just you!) captured during the current year since you were last interviewed: _____

How many have you kept? _____

How many were tagged? _____

Other Fish Captured Today? _____

SASKATCHEWAN RIVER STURGEON CAMP SURVEY

Location: _____

Date (month, day) _____

Resident of: _____

Period of survey: _____

Fishing methods: Angling _____ Netting _____

Number of nets: _____ Length: _____ Mesh Size: _____

Number of days: _____

Angling (hours): _____

Number of sturgeon captured in 2002 since last interview: _____

Where were sturgeon captured? _____

Were any tagged? _____

Tag numbers: _____

Appendix 4. Sample questionnaire for the Saskatchewan River Lake Sturgeon Harvest Study river survey at Cumberland House, 2002.

SASKATCHEWAN RIVER STURGEON CREEL SURVEY

Date (month, day): _____

Time: _____

Reach: _____

Location: _____

Shore _____ Boat _____ Camp _____

Angler _____ Domestic Net Fisher _____ Commercial Fisher _____

Number in Group _____

Approached: Yes _____ No _____

TODAY

Resident of: _____

Number of nets (hooks) _____ Length _____ Mesh Size _____

Hours Fished: _____

How much longer will you fish today? _____

Are you fishing for sturgeon? Yes _____ No _____

Number of Sturgeon Captured Today: _____

Number of Sturgeon Kept Today: _____

Where were sturgeon captured: _____

How many were tagged? _____

Tag Numbers: _____

Length of Sturgeon Kept (total length in cm): _____

PRIOR TO TODAY

Have you been interviewed before? Yes _____ No _____

When? _____

Other than the sturgeon above, how many sturgeon have you (just you!) captured during the current year since you were last interviewed: _____

In what reach of the river were the sturgeon captured?

- Torch River _____
- Mossy River _____
- Cumberland Lake _____
- Bigstone Cutoff _____
- Bigstone Rapids _____
- Tearing River _____
- Other _____

How many were kept? _____

How many were tagged? _____

What do you do with sturgeon that you keep? _____

Appendix 5. Sturgeon captures reported by index fishers during the Cumberland House harvest survey that were also assumed to be measured and released as part of the SRSMB index fishery program.

Date	Time	Interview Reach	Interview Location	# index sturgeon (day of interview)	# index sturgeon (previously)	Length (cm)			Weight (g)		Where sturgeon were caught
						#1	#2	#3	#1	#2	
23-Jun-02	15:45	12 miles d/s of ferry	Sask. River	2	-	141	142	-	25	28	20 km from Cumb. House
25-Jun-02	15:30	Carriere's Camp	Mossy River	7	-	150	135	100	33	16	Mossy River
28-Jun-02	11:00	Central Angling R.	Muskeg Lake	4	-	-	-	-	-	-	Central Angling River
28-Jun-02	12:00	Central Angling R.	Muskeg Lake	5	-	-	-	-	-	-	Central Angling River
02-Jul-02	15:00	Sturgeon Fisheries	Mossy River	15	-	-	-	-	33.64	28.64	Torch R. (5), Mossy R. (4), Muskeg L (6)
04-Jul-02	21:30	Portage	Sask. River	2	-	-	-	-	11.36	9.09	2 miles d/s Portage
05-Jul-02	18:45	South Angling R.	Central Angling	1	-	-	-	-	27.27	-	King David camp
05-Jul-02	20:45	Old Man Island	Sask. River	3	-	-	-	-	-	-	Upstream cutoff
06-Jul-02	17:00	Windy Lake	Mossy River	1	-	-	-	-	-	-	Mossy River
06-Jul-02	14:30	South Angling R.	Goulet's Camp	-	1	-	-	-	-	-	-
10-Jul-02	8:30	Pemmican Portage	Sask. River	2	-	-	-	-	-	-	4 km d/s Portage
22-Jul-02	21:00	Pemmican Portage	Sask. River	0	10	-	-	-	-	-	Steamboat Rapids
25-Jul-02	17:00	Dorion Island	Sask. River	0	6	-	-	-	-	-	Barrier Lake area
25-Jul-02	16:30	Tearing River Outlet	Sask. River	0	6	-	-	-	-	-	near outlet
22-Aug-02	10:56	cut off	Sask. River	1	-	-	-	-	19.09	-	Cumberland Lake
22-Aug-02	12:16	Central Angling River	Sask. River	1	63	-	-	-	-	-	Muskeg, Central Angling
22-Aug-02	11:30	Central Angling River	Sask. River	-	2	-	-	-	14.55	7.27	-
04-Sep-02	12:28	Torch River	Torch River	-	12	-	-	-	-	-	-
04-Sep-02	17:30	Mistik Lodge	Cumberland Lake	-	12	-	-	-	-	-	Cumberland Lake
07-Sep-02	12:30	Tearing River Outlet	Sask. River	-	5	-	-	-	-	-	Tearing R