



MINNESOTA DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF FISH AND WILDLIFE  
ENVIRONMENT SECTION

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Progress Report On The Prairie Island Creel  
Survey April 30 - December 3, 1974

BY:

Robin L. Naplin

and

Scott P. Gustafson

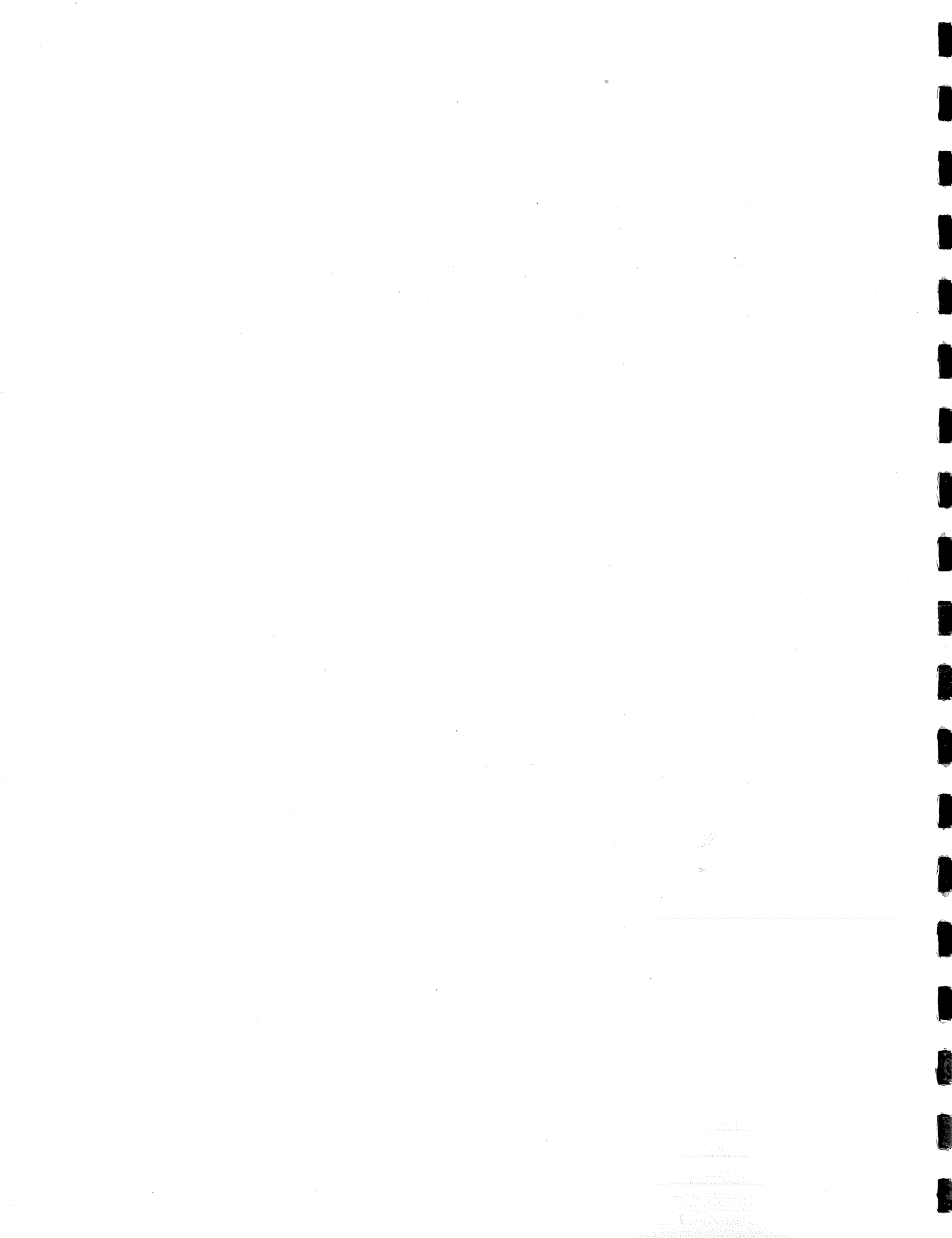
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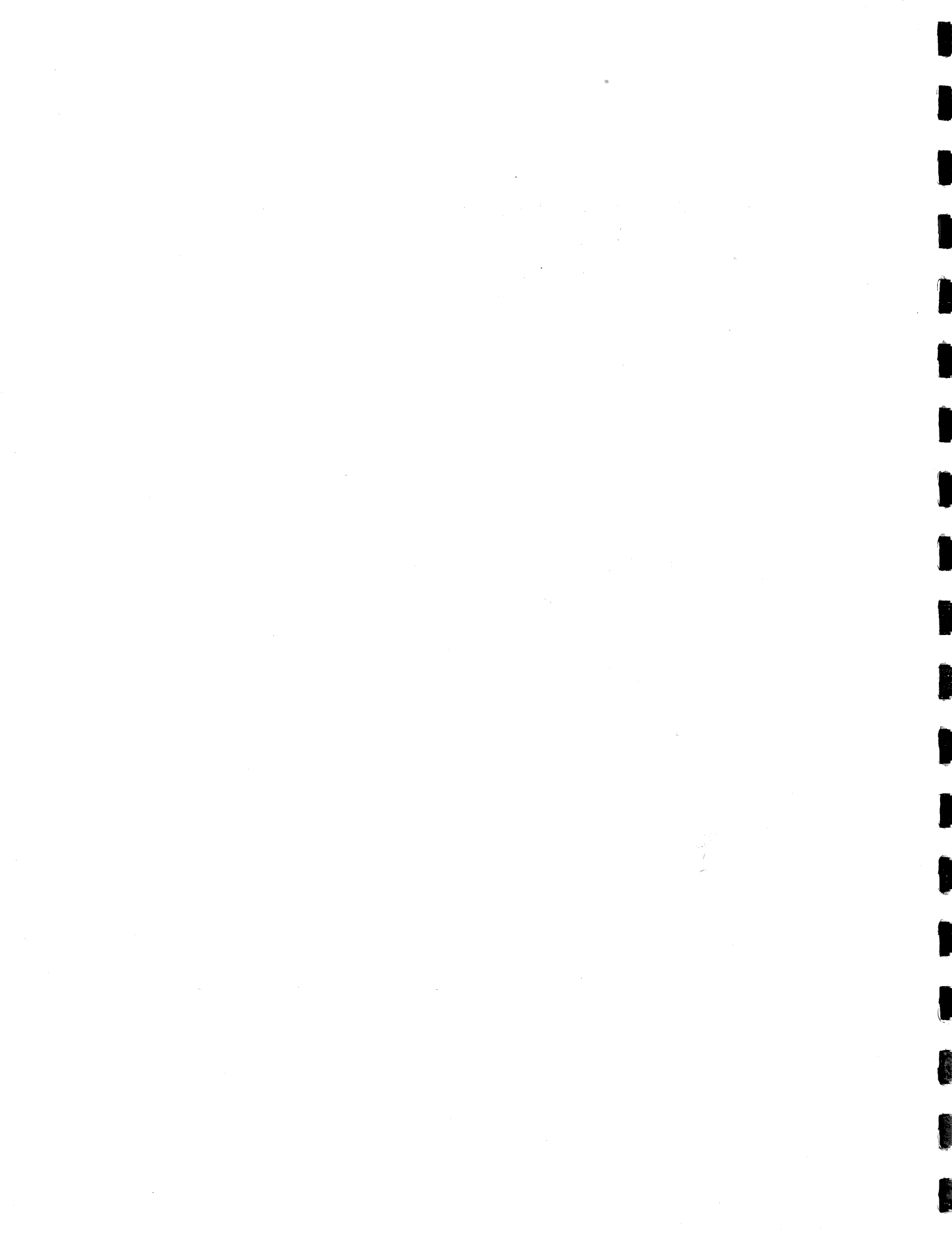
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Northern States Power Company



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## INTRODUCTION

### Scope

This report includes results of the second season of creel survey on a portion of the Mississippi River near Red Wing, Minnesota in the vicinity of the Prairie Island Nuclear Generating Plant. This creel survey is part of a total study to determine effects of the plant on fish and fishing in the Mississippi River in the Prairie Island Area.

### General

The creel survey is intended to provide data on sport fishery before and after the plant begins full operation. Data collected includes information on sport fishing success, pressure, and harvest, as well as information about characteristics of anglers and fishing trips.

Fishing regulations in the Prairie Island area are different than for inland waters in either Minnesota or Wisconsin. Principal differences from Minnesota inland angling regulations are:

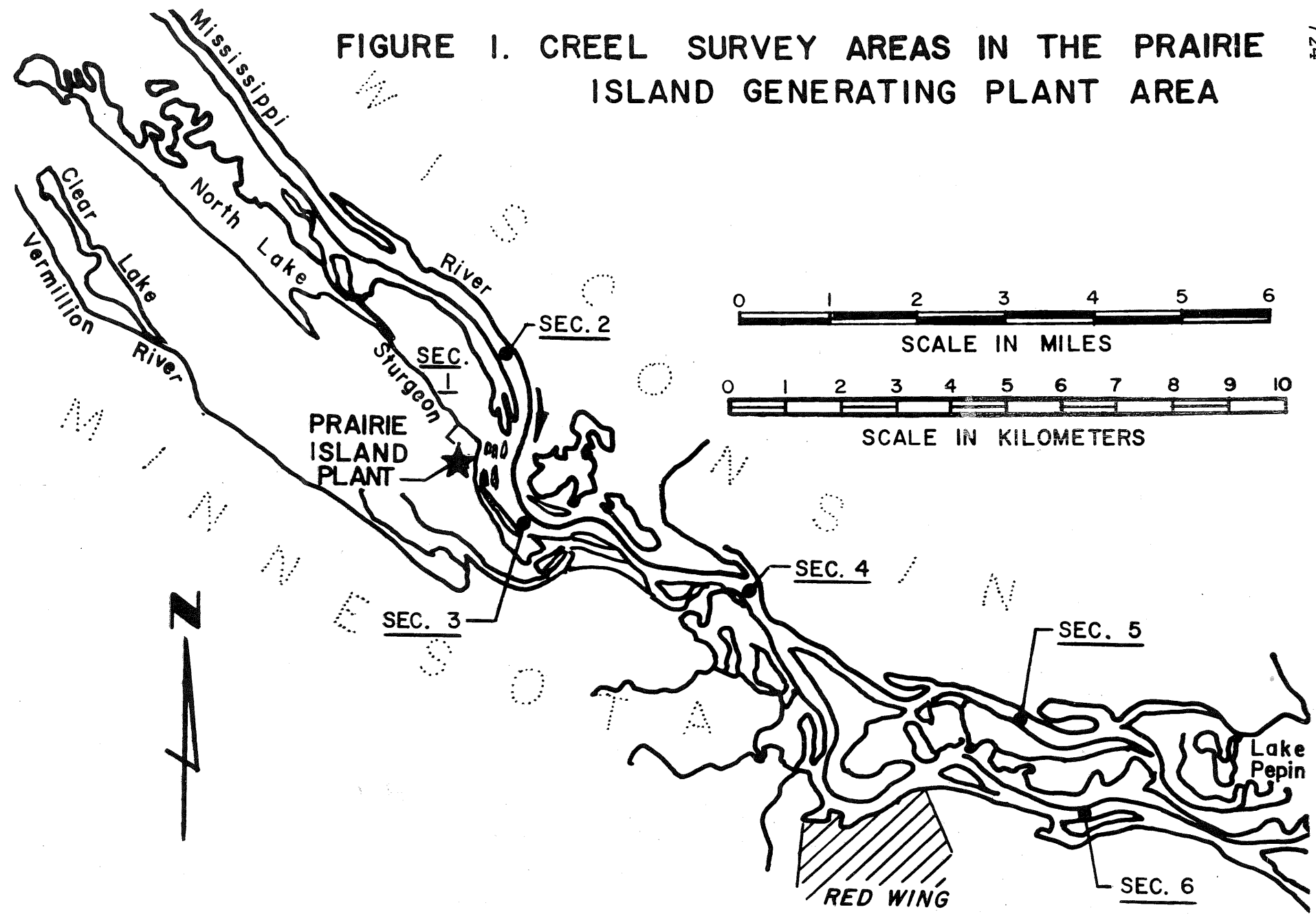
1) angling seasons are continuous (except for sturgeon), 2) two-line angling is legal, and 3) tip-up apparatus may be used when ice fishing. Based on knowledge of fishing pressure in previous years, the 1974 creel survey was conducted between April 30 and December 3, 1974, inclusive. There is little or no ice fishing in the vicinity of the Prairie Island Plant because of hazardous ice conditions, therefore, the winter season was not surveyed.

## METHODS

### General

For the creel survey, the Mississippi River and its backwaters in the Prairie Island area were divided into six sections (Figure 1). The six sections are described as follows:

FIGURE 1. CREEL SURVEY AREAS IN THE PRAIRIE ISLAND GENERATING PLANT AREA



Section 1 - Sturgeon Lake

Section 2 - Main channel from Brewer Lake cut downstream to the plant intake

Section 3 - Main channel and backwaters from the plant intake downstream to Lock and Dam 3

Section 4 - Tailwaters of Lock and Dam 3 to Highway 63 bridges on the main channel (at Red Wing) and the back channel (Wisconsin Channel)

Section 5 - Wisconsin Channel and all backwaters from Highway 63 to Bay City Flats (head of Lake Pepin)

Section 6 - Main channel from Highway 63 to the head of Lake Pepin

These sections were visited in rotation taking care not to create a pattern that would cause biases in pressure and harvest estimates.

Data collection was done the same as in 1973. Instantaneous counts of fishing boats and anglers, bank anglers, launch anglers, runabouts, sailboats, canoes, waterskiers, overnight camps, observations on water stage, wind, weather, and water and air temperature are recorded for each section.

If anglers were present, as many as possible were interviewed in the time allotted for each sector. Data from interviews were recorded, and included were species of fish sought, time spent fishing, number and species of fish caught, trip status (complete or incomplete at time of contact), residence, distance traveled, age, sex, fishing method, and type of lure or bait used by the angler interviewed.

If no anglers were present, the clerk waited at least one hour before making a count in the next section. If numerous anglers were present, no more than four hours were spent in any one section, ensuring that data were collected from at least two sections each day during periods of heavy fishing pressure. No anglers were interviewed in Section 3 during the 1974 survey

period. Data were processed in the same manner as in 1973. All comparisons between 1973 and 1974 are for May 10 through November 5, unless stated otherwise.

#### CALCULATIONS

##### Fishing Pressure

Because of observed differences in fishing pressure, angler-count data were divided into two strata (week days and weekend days), and angling pressure was estimated for each stratum. Holidays (Memorial Day, Fourth of July, and Labor Day) are included with weekend days.

Estimates of fishing pressure in each section in man-hours are made in the following manner:

$$\frac{\text{Number of anglers counted on weekend days}}{\text{Number of weekend counts}} \times \text{Daylight hours in weekends} = \text{Estimated man-hours fished during weekends} = A$$

$$\frac{\text{Number of anglers counted on weekdays}}{\text{Number of weekday counts}} \times \text{Daylight hours in weekdays} = \text{Estimated man-hours fished during weekdays} = B$$

A + B = total estimated man-hours fished during survey period.

Night fishing pressure was assumed to be zero (Hawkinson, 1974).

##### Fishing Success

Fishing success is measured as fish caught per man-hour of angling (fish/m-h). Information from angler interviews is used to determine fishing success.

Two basic catch rate figures were calculated. The "overall catch rate" is the total number of fish caught by interviewed anglers divided by the total number of man-hours those anglers spend fishing. This method does not account for differences in catch rates due to the species of fish the angler is seeking. A second method is used to account for this bias. "Preference species catch rate" or "sought catch rate" is calculated by

dividing the number of fish of a particular species caught by anglers seeking that species by the number of man-hours those anglers spend fishing for that species.

### Harvest

Harvest or yield is the weight of fish removed from a specific area during a period of time. Harvest is calculated by multiplying the overall catch rate for a species, times the pressure, times the average weight of angler-caught fish of that species and divided by the surface area of the section. For example:

$$\frac{\text{Overall catch rate for a species} \quad \text{Estimated hours angling X in the section} \quad \text{Average weight of angler-caught fish for that species}}{\text{surface area of section}}$$

## RESULTS AND DISCUSSION

### Fishing Pressure

Fishing pressure is expressed as the number of man-hours spent fishing in each section during a given period of time. In 1974, estimated fishing pressure was divided about equally between weekends and weekdays (Table 1). The greatest amount of pressure occurred in Section 4. Most of the pressure in Section 4 came from weekday anglers.

Fishing pressure (Table 2) varied throughout the survey season with peak fishing pressure in all areas (except Section 4) coming during the fall period (September 1 through December 3, 1974).

Fishing pressure was highest below Lock and Dam 3, particularly in the immediate tail waters. Sturgeon Lake, the main channel above Lock and Dam 3, and the plant area received very little pressure. Total estimated fishing pressure for the 1,601 hectares surveyed was 70,311 man-hours, or 43.9 man-hours per hectare (Table 1), for the 31 weeks surveyed during the 1974 season.

Table 1 - Estimated fishing pressure for weekend days and weekdays in the Prairie Island vicinity, April 30 - December 3, 1974

Sections	1	2	3	4	5	6	Total
Area of Sections (hectares)	324	180	83	257	516	241	1,601
Weekend Man-hours	484	131	126	20,665	9,858	3,108	34,372
Weekday Man-hours	328	565	27	25,646	7,256	2,117	35,939
Total Man-hours	812	696	153	46,311	17,114	5,225	70,311
Man-hours per hectare	2.5	3.9	1.8	180.2	33.2	21.7	43.9

Total weekend day daylight hours\* 870.6

Total weekday daylight hours\* 1,959.6

\*Taken from "Sunrise and Sunset at Minneapolis, Minnesota, central standard time," Table 1155 of the Nautical Almanac Office, U.S. Naval Observatory, 1965.



Table 2 - Estimated fishing pressure for bank and boat anglers by section and season in the Prairie Island vicinity, April 30 - December 3, 1974

Area (hectares)	<u>SECTIONS</u>						1974
	1	2	3	4	5	6	Total
	324	180	83	257	516	241	1,601
	Man-hours fished						
Bank Anglers							
Spring (April 30-May)	0	0	0	785	0	528	1,313
Summer (June-Aug)	0	124	0	2,685	64	925	3,798
Fall (Sept-Dec 3)	0	0	0	486	0	172	658
Total	0	124	0	3,956	64	1,625	5,769
Boat Anglers							
Spring	0	0	0	4,647	3,365	1,070	9,082
Summer	644	369	153	9,911	13,263	2,339	26,679
Fall	168	203	0	27,797	422	191	28,781
Total	811	572	153	42,355	17,050	3,600	64,542
All Anglers							
Spring	0	0	0	5,432	3,365	1,598	10,395
Summer	644	493	153	12,595	13,327	3,264	30,476
Fall	168	203	0	28,284	422	363	29,440
1974 Total	812	696	153	46,311	17,114	5,225	70,311

Fishing pressure during the 26 weeks (May 10 - November 5) surveyed in 1973 was 51.2 man-hours per hectare. Comparison of fishing pressure during identical periods for both years (Table 3) shows that estimated fishing pressure in 1974 decreased by 12.6 man-hours per hectare from that observed in 1973.

#### Fishing Success

Total overall catch rates for April 30 through December 3, 1974 are shown in Table 4. Total overall catch rate for May 10 through November 5, 1974 (0.63 fish per man-hour) was somewhat higher than the 1973 total overall catch rate of 0.56 fish per man-hour (Table 5). In 1974, the total overall catch rate was 0.58 fish per man-hour for the April 30 to December 3 survey period.

The catch rate of preferred species (Tables 6 and 7) shows the quality of fishing for each species in 1974. It is the catch rate for anglers seeking a certain species.

In 1973 and 1974, sauger/walleye and mixed species were sought more than any other categories of fish (Table 8). The mixed category includes all anglers fishing for anything they can catch. Preference species catch rate for sauger/walleye, catfish, and mixed increased for 1974. Preference species catch rates for panfish (crappies, sunfish, smallmouth bass) and white bass in 1974 decreased from 1973. Preference species catch rate for white bass decreased from 3.17 fish/hour in 1973 to 1.88 fish/hour in 1974. However, only 3.2 man-hours were recorded seeking white bass in 1974 compared to 52.0 man hours in 1973.

#### Angling Harvest

Estimated harvest of three major species - walleye, sauger, and white bass - was calculated and is shown in Tables 10 and 11. Harvest was estimated by the following formula:

Table 3 - Estimated pressure for May 10 - November 5, 1973 and 1974 in the Prairie Island vicinity

	SECTIONS						Total
	1	2	3	4	5	6	
Area (hectares)	324	180	83	257	516	241	1,601
1974 Man-hours	812	696	153	39,469	16,365	4,437	61,932
1973 Man-hours	200	870	500	41,210	26,880	12,350	82,010
1974 Man-hours/hectare	2.5	3.9	1.8	153.6	31.7	18.4	38.9
1973 Man-hours/hectare	0.6	4.8	6.0	160.4	52.1	51.2	51.2

Table 4 - Overall catch rate for interviewed anglers fishing in the Prairie Island vicinity  
 April 30 - December 3, 1974

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Fishing Success - Fish Per Man-hour (Number of Fish)

	SECTION						1974 Total
	1	2	3	4	5	6	
Man-hours surveyed	16.3	14.5		2872.8	961.1	226.3	4091.0
Percent Successful anglers*	64	84		63	55	45	61
SPECIES CAUGHT							
Carp				0.01 (20)	0.01 (6)	0.01 (2)	0.01 (28)
Channel catfish	0.31 (5)	0.14 (2)		tr** (11)	tr (3)	0.02 (4)	0.01 (25)
Brown bullhead				tr (8)			tr (8)
Flathead catfish				tr (1)	tr (1)		tr (2)
Northern pike		0.07 (1)		tr (12)	0.01 (9)	0.01 (2)	tr (24)
White bass	0.49 (8)	1.38 (20)		0.18 (510)	0.02 (21)	0.06 (14)	0.14 (573)
Sauger		0.07 (1)		0.37 (1061)	0.10 (94)	0.12 (26)	0.29 (1182)
Walleye	0.18 (3)	0.07 (1)		0.03 (81)	0.22 (214)	0.19 (44)	0.08 (343)
Smallmouth bass				tr (10)			tr (10)
Largemouth bass				tr (1)	tr (2)		tr (3)
Sunfish***				tr (2)	0.05 (46)		0.01 (48)
Rock bass				0.01 (19)			0.01 (19)
Crappies				tr (4)	0.01 (7)		tr (11)
Freshwater drum	1.23 (20)	0.41 (6)		0.02 (60)	0.01 (11)	0.06 (13)	0.03 (110)
1974 Total	2.21 (36)	2.14 (31)		0.63 (1800)	0.43 (414)	0.46 (105)	0.58 (2386)

No anglers interviewed

\*At least one fish caught

\*\*0 < trace (tr) ≤ 0.005

\*\*\*Bluegill, pumpkinseed, green sunfish, and hybrid sunfish

Table 5 - Overall catch rate for interviewed anglers fishing in the Prairie Island vicinity,  
May 10 - November 5, 1973 and 1974

Fishing Success - Fish per man-hour (number of fish)

	1	2	3	4	5	6	Adjusted* 1974 Total	1973 Total**
Man-hours surveyed	16.3	14.5		2242.0	922.6	187.5	3382.9	5081.0
<u>Species caught</u>								
Sturgeon								tr*** (1)
Gar								tr (1)
Mooneye								tr (1)
Suckers and redhorse								tr (1)
Carp				0.01 (20)	0.01 (6)	0.15 (28)	0.02 (54)	0.01 (25)
Channel catfish	0.31 (5)	0.14 (2)		tr (11)	tr (3)	0.13 (25)	0.01 (46)	
Brown bullhead				tr (8)		0.04 (8)	tr (16)	
Flathead catfish				tr (1)	tr (1)		tr (2)	0.02 (85)
Northern pike		0.07 (1)		0.01 (12)	0.01 (9)	0.01 (2)	0.01 (24)	tr (17)
White bass	0.49 (8)	1.38 (20)		0.21 (473)	0.02 (21)	0.07 (14)	0.16 (536)	0.17 (864)
Yellow perch								tr (6)
Sauger		0.07 (1)		0.34 (753)	0.10 (91)	0.09 (16)	0.28 (861)	0.22 (1120)
Walleye	0.18 (3)	0.07 (1)		0.02 (55)	0.23 (210)	0.19 (35)	0.09 (304)	0.09 (451)
Smallmouth bass				tr (10)			tr (10)	tr (6)
Largemouth bass				(1)	(2)		tr (3)	tr (2)
Sunfish****				(2)	0.05 (46)		0.01 (48)	0.02 (92)
Rock bass				0.01 (19)			0.01 (19)	tr (3)
Crappies				tr (3)	0.01 (7)		tr (10)	0.01 (54)
Freshwater drum	1.23 (20)	0.41 (6)		0.03 (60)	0.01 (11)	0.59 (110)	0.06 (207)	0.02 (115)
Adjusted* 1974 Total	2.21 (36)	2.14 (31)		0.64(1428)	0.44 (407)	1.27 (238)	0.63(2140)	
1973 Total	0.36 (4)	0.75 (3)	0.33 (1)	0.69(1831)	0.44 (791)	0.36 (216)		0.56 (2844)

\* Same survey period as 1973

\*\* 1973 Prairie Island Annual Environmental Report, page C-5.74

\*\*\* 0 < trace (tr) < 0.005

\*\*\*\* Bluegill, pumpkinseed, green sunfish, and hybrid sunfish

Table 6 - Catch rates of preferred species for interviewed anglers fishing in the Prairie Island vicinity, April 30 - December 3, 1974

	Fish Per Man-hour					
	Sections					
	1	2	3	4	5	6
SPECIES SOUGHT						
Catfish	0.91 (5.5)*	2.00 (1.0)		0.33 (9.2)	0 (6.0)	1.14 (3.5)
Northern pike					0 (1.0)	
White bass				1.88 (3.2)		
Sauger/walleye	0.62 (4.8)			0.56 (1381.3)	0.33 (650.8)	0.34 (121.0)
Smallmouth bass				0.50 (2.0)		
Sunfish**					0.68 (23.5)	
Crappies				0 (14.5)	0.50 (12.0)	
Mixed***	0.50 (6.0)	2.15 (13.5)		0.66 (1462.6)	0.58 (267.8)	0.51 (101.8)
1974 TOTAL Man-hours Fished	(16.3)	(14.5)	No anglers interviewed	(2872.8)	(961.1)	(226.3)

\*Numbers in parentheses are number of man-hours fished for each species

\*\*Bluegill, pumpkinseed, green sunfish, and hybrid sunfish

\*\*\*Fishing for any fish that will bite

Table 7 - Catch rates of preferred species for interviewed anglers fishing in the Prairie Island vicinity, May 10 - November 5, 1974

SPECIES SOUGHT	Fish/Man-hour											
	Sections											
	1		2		3		4		5		6	
Catfish	0.91	(5.5)	2.00	(1.0)			0.33	(9.2)	0	(6.0)	1.14	(3.5)
Northern pike	---		---				---		0	(1.0)		---
White bass	---		---				1.88	(3.2)				---
Sauger/walleye	0.62	(4.8)	---				0.52	(892.6)	0.34	(612.3)	0.38	(87.5)
Smallmouth bass	---		---				0.50	(2.0)	---			---
Largemouth bass	---		---				---		---			---
Sunfish**	---		---				---		0.68	(23.5)		---
Crappies	---		---				0	(14.5)	0.50	(12.0)		---
Mixed***	0.50	(6.0)	2.15	(13.5)			0.67	(1354.6)	0.58	(267.8)	0.54	(96.5)
Adjusted 1974 Man-hours surveyed		(16.3)		(14.5)				2276.1		922.6		187.5

No anglers interviewed

\*Numbers in parentheses are number of man-hours fished for each species

\*\*Bluegill, pumpkinseed, green sunfish, and hybrid sunfish

\*\*\*Fishing for any fish that will bite

Table 8 - Comparison of catch rates of preferred species in the Prairie Island vicinity, 1973 and 1974

Fish Per Man-hour

SPECIES SOUGHT	1973		1974			
	May 10-November 5		May 10-November 5		April 30-December 3	
Catfish	0.41	(67.5)*	0.56	(25.2)	0.56	(25.2)
Northern pike	0	(0.5)	0	(1.0)	0	(1.0)
White bass	3.17	(52.0)	1.88	(3.2)	1.88	(3.2)
Sauger walleye**	0.42	(2503.5)	0.45	(1597.2)	0.48	(2157.9)
Smallmouth bass	0.67	(3.0)	0.50	(2.0)	0.50	(2.0)
Largemouth bass	0.40	(5.0)	---	---	---	---
Sunfish***	0.88	(68.5)	0.68	(23.5)	0.68	(23.5)
Crappies	0.37	(13.5)	0.23	(26.5)	0.23	(26.5)
Panfish	0.44	(22.5)	---	---	---	---
Mixed****	0.58	(2342.0)	0.66	(1738.4)	0.65	(1851.7)
Rough fish	0	(3.0)	---	---	---	---
TOTAL Man-hours fished	(5081.0)		(3417.0)		(4091.0)	

\*Numbers in parentheses are number of man-hours fished for each species

\*\*Considered one species sought

\*\*\*Bluegill, pumpkinseed, green sunfish, and hybrid sunfish

\*\*\*\*Fishing for any fish that will bite



Table 9 - Average weights of angler-caught fish of three major game species, 1973 and 1974

Species	1973		1974	
	Number Weighed	Average Weight (kg)	Number Weighed	Average Weight (kg)
White Bass	26	0.54	56	0.62
Sauger	414	0.39	1,431	0.59
Walleye	693	0.56	375	0.75

Table 10 - Estimated harvest of three major game species caught in each section in the Prairie Island vicinity, April 30 - December 3, 1974

Section	SPECIES			Total
	White bass	Sauger	Walleye	
Number of fish	397	0	146	543
1 Weight (kg) of fish	246.1	0	109.5	355.6
Kilograms per hectare	0.75	0	0.34	1.09
Number of fish	960	49	49	1,058
2 Weight (kg) of fish	595.2	28.9	36.8	660.9
Kilograms per hectare	3.31	0.16	0.20	3.67
Number of fish				
3 Weight (kg) of fish	No anglers interviewed			
Kilograms per hectare				
Number of fish	8336	17,135	1,389	26,860
4 Weight (kg) of fish	5168.3	10,109.7	1041.8	16,319.8
Kilograms per hectare	20.11	39.34	4.05	63.50
Number of fish	342	1,711	3,765	5,818
5 Weight (kg) of fish	212.0	1009.5	2823.8	4,045.3
Kilograms per hectare	0.41	1.96	5.47	7.84

Table 10 Cont. - Estimated harvest of three major game species caught in each section in the Prairie Island vicinity, April 30 - December 3, 1974

Section	SPECIES			Total	
	White bass	Sauger	Walleye		
Number of fish	314	627	993	1,934	
6 Weight (kg) of fish	194.7	369.9	744.8	1,309.4	
Kilograms per hectare	0.81	1.53	3.09	5.43	
All Sections	Number of fish	10,349	19,522	6,342	36,213
	Weight (kg) of fish	6,416.4	11,518.0	4,756.5	22,691.0
	Kilograms per hectare	4.01	7.19	2.97	14.17

Table 11 - Estimated harvest of three major game species caught  
in each section in the Prairie Island vicinity, May 10-  
November 5, 1974

Section	SPECIES				
	White bass	Sauger	Walleye	Total	
1	Number of fish	398	0	146	544
	Weight of fish (kg)	256.8	0	109.5	356.3
	Kilograms per hectare	0.76	0	0.34	1.10
2	Number of fish	960	49	49	1,058
	Weight of fish (kg)	595.2	28.9	36.8	660.9
	Kilograms per hectare	3.31	0.16	0.20	3.67
3	Number of fish	No anglers interviewed			
	Weight of fish (kg)	No anglers interviewed			
	Kilograms per hectare	No anglers interviewed			
4	Number of fish	8,288	13,419	789	22,496
	Weight of fish (kg)	5,138.6	7,917.2	591.8	13,647.2
	Kilograms per hectare	19.99	30.81	2.30	53.10
5	Number of fish	327	1,636	3,764	5,727
	Weight of fish (kg)	202.7	965.2	2,823.0	3,990.9
	Kilograms per hectare	0.39	1.87	5.47	7.73

Table 11 Cont. - Estimated harvest of three major game species caught in each section in the Prairie Island vicinity, May 10 - November 5, 1974

Section	SPECIES				
	White bass	Sauger	Walleye	Total	
Number of fish	311	399	843	1,553	
6 Weight of fish (kg)	192.8	235.4	632.3	1,060.5	
Kilograms per hectare	0.80	0.98	2.62	4.40	
All Sections	Number of fish	10,284	15,503	5,591	31,378
	Weight of fish (kg)	6,376.1	9,146.7	4,193.4	19,716.2
	Kilograms per hectare	3.98	5.71	2.62	12.31

Estimated man hours X overall catch rate X average weight =  
Estimated Harvest

Average weights (Table 9) are of angler-caught fish throughout the season. Although estimated fishing pressure (Table 3) and estimated number of fish of these species caught in 1974 decreased from 1973, total pounds of walleye and sauger harvested in 1974 increased from 1973. Pounds of white bass harvested decreased (Table 12). The reason for the seeming paradox of increased harvest with decreased fishing pressure is because the average weight of angler-caught fish increased over that found in 1973 (Table 9). There was a heavy harvest of these three species in Section 4. Most of the harvest from this Section was from tailwaters of Lock and Dam 3.

#### Species Composition

Species composition of fish creeled by anglers in the Prairie Island vicinity from April 30 through December 3, 1974 is presented in Table 13. The four species most abundant in the creel are walleye, sauger, white bass, and freshwater drum. Species composition of fish creeled by anglers by section is illustrated in Figure 2. The remaining species were combined into one category called "other" (Figure 2).

Sauger comprised almost half of the total number of fish caught in the Prairie Island vicinity during 1974 (Table 13). White bass were second, comprising about 24 percent of the total catch. Walleye made up about 14.5 percent of the fish creeled and were the third most abundant species caught. Freshwater drum comprised about 4.5 percent of the catch. For May 10 - November 5, sauger were about equally abundant in the creel in 1974 (40.23%) as in 1973 (39.38%). White bass creeled in 1974 decreased five percent from 1973. Walleye comprised 15.86 percent

Table 12 - Comparison of estimated harvests of three major game species caught in the Prairie Island vicinity, 1973 and 1974

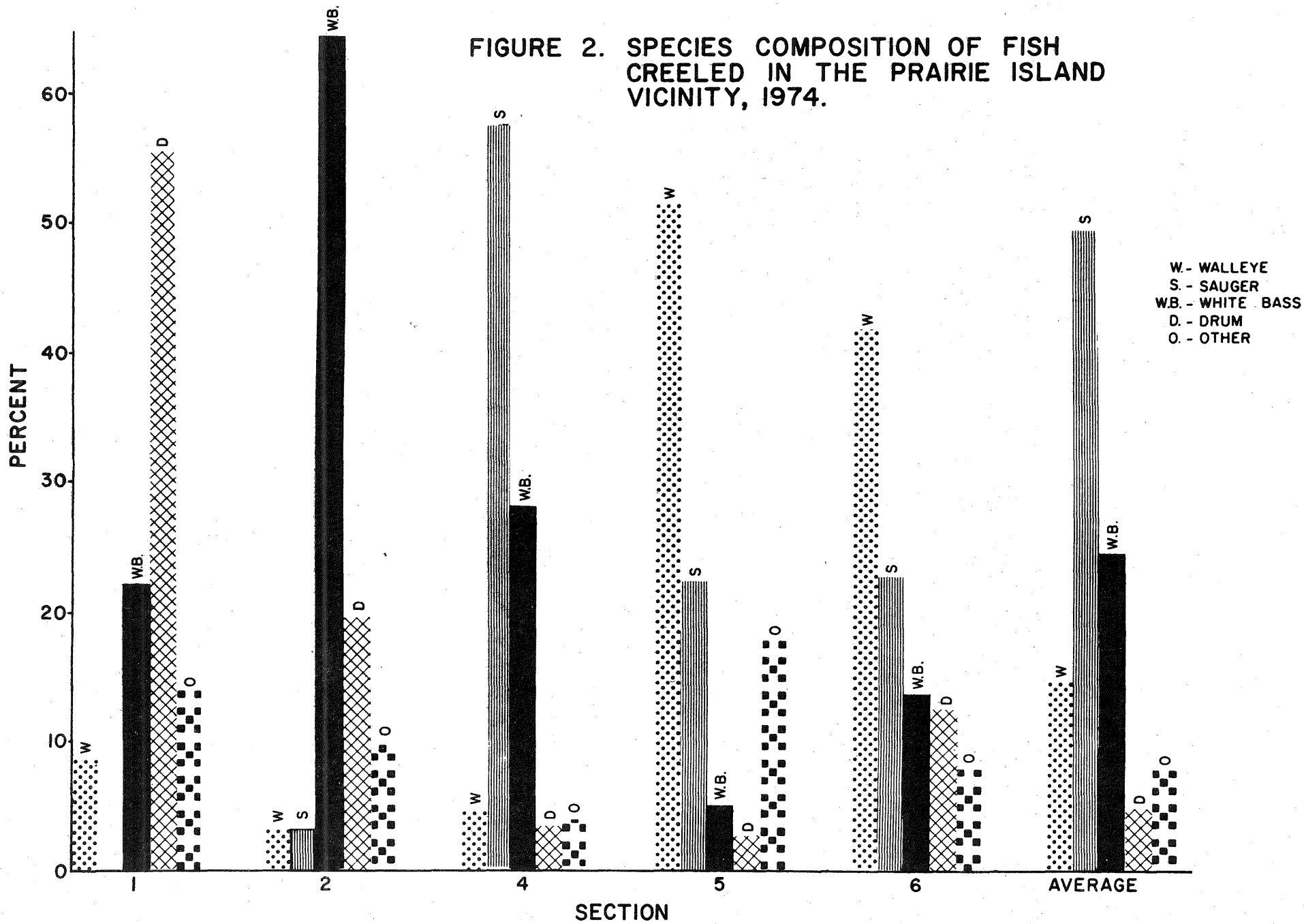
		SPECIES			
Date		White bass	Sauger	Walleye	Total
1974 April 30- Dec. 3	Number of fish	10,349	19,522	6,342	36,213
	Weight of fish (kg)	6,416.4	11,518.0	4,756.5	22,691.0
	Kilograms per hectare	4.01	7.19	2.97	14.17
1974 May 10- Nov. 5	Number of fish	10,284	15,503	5,591	31,378
	Weight of fish (kg)	6,376.1	9,146.7	4,193.4	19,716.2
	Kilograms per hectare	3.98	5.71	2.62	12.31
1973 May 10- Nov. 5	Number of fish	13,942	18,042	7,381	39,365
	Weight of fish (kg)	7,528.5	7,036.5	4,133.3	18,698.3
	Kilograms per hectare	4.70	4.40	2.58	11.68

Table 13 - Species composition of fish creel in the Prairie Island vicinity, 1973 and 1974

SPECIES	Percentage		
	May 10-November 5, 1973	May 10-November 5, 1974	April 30-December 3, 1974
Sturgeon	0.04	tr*	tr
Gar	0.04	tr	tr
Mooneye	0.04	tr	tr
Suckers and redhorse	0.04	tr	tr
Carp	0.88	2.52	1.17
Channel catfish	tr	2.15	1.05
Brown bullhead	tr	0.75	0.34
Flathead catfish	2.99	0.09	0.08
Northern pike	0.60	1.12	1.01
White bass	30.38	25.05	24.02
Yellow perch	0.21	tr	tr
Sauger	39.38	40.23	49.54
Walleye	15.86	14.21	14.38
Smallmouth bass	0.21	0.47	0.42
Largemouth bass	0.07	0.14	0.13
Sunfish	3.23	2.24	2.01
Rock bass	0.11	0.89	0.80
Crappies	1.90	0.47	0.46
Freshwater drum	4.04	9.67	4.61

\*  $0.1\% \leq \text{trace (tr)} < 0.5\%$





of the creel in 1973 and 14.21 percent in 1974. Freshwater drum increased from 4.0 percent in 1973 to 9.67 percent in 1974.

#### The Angler

A typical angler in the study area was a man 25 years of age or older who traveled less than 50 miles to fish for sauger/walleye or mixed species (Tables 14-16). Over 90 percent of anglers were men. Age groups are those used by the U.S. Fish and Wildlife Service in "National Surveys of Hunting and Fishing", with the addition of the "0-12" age group. Results are thus directly comparable to the national data.

The largest single group of anglers (39.3 percent) traveled 25 miles or less to fish (Table 16). The second largest group of anglers (31 percent) traveled more than 150 miles to fish in the tailwaters of Lock and Dam 3. Distances reported traveled in 1974 were similar to those reported in the 1973 survey.

The highest total overall catch rate (0.29 fish per man-hour) was for sauger, April 30 through December 3, 1974. White bass had the second highest total overall catch rate (0.14 fish per man-hour), but only one percent of the anglers were actively seeking white bass (Tables 5 and 16).

The fishing style used most often by anglers in the study area was still fishing with natural bait (Tables 17 and 18). The highest occurrence of still fishing was in Section 4 (Table 19). Still fishing and trolling are used almost equally in Sections 5 and 6.

#### SUMMARY

The 1974 creel survey showed an overall catch rate very similar to that in the 1973 survey. The catch rate of preferred species

Table 14 - Fishermen of each age group and sex fishing in the Prairie Island vicinity,  
April 30-December 3, 1974

	AGES								TOTAL 1974
	0-12	13-15	16-17	18-24	25-34	35-44	45-65	65+	
% Male	2.91	2.30	0.00	7.22	18.19	16.25	33.23	11.28	91.39
Number male	48	38	0	119	300	268	548	186	1,507
% Female	0.36	0.55	0.00	0.24	1.09	1.76	4.18	0.42	8.61
Number Male	6	9	0	4	18	29	69	7	142
% Total	3.27	2.85	0.00	7.46	19.28	18.01	37.41	11.70	100.00
Number total (1974)	54	47	0	123	318	297	617	193	1,649

Table 15 - Distance travelled by anglers fishing in the Prairie Island vicinity, April 30-December 3, 1974

## PERCENTAGE OF ANGLERS

DISTANCE TRAVELED (MILES)	SECTIONS						1974 TOTAL	1973 TOTAL
	1	2	3	4	5	6		
0 - 25	62.50	47.20	NO ANGLERS WERE INTERVIEWED	34.58	43.22	78.52	39.27	33
26 - 50	18.75	28.57		7.52	28.14	6.67	11.57	12
51 - 75	18.75	9.52		16.06	15.58	5.93	15.29	12
76 - 100	-	-		1.64	0.75	-	1.35	2
101 - 150	-	-		1.71	0.50	-	1.35	7
151 - 200	-	9.52		24.08	9.55	5.19	19.89	22
201+	-	4.76		14.41	2.26	3.70	11.29	12

Table 16 - Percentage of fishermen seeking each species of fish in the Prairie Island area, April 30-December 3, 1974

Species	1	2	3	4	5	6	Total
Northern pike					0.26(1)		0.06(1)
Walleye and sauger	42.86(6)			45.31(536)	63.42(241)	46.55(54)	49.06(837)
Crappies				0.25(3)	0.79(3)		0.35(6)
Sunfish					2.63(10)		0.59(10)
White bass				0.34(4)			0.23(4)
Smallmouth bass				0.17(2)			0.12(2)
Catfish	14.29(2)	15.82(2)		0.76(9)	1.05(4)	1.72(2)	1.11(19)
Mixed	42.86(6)	84.62(11)		53.17(629)	31.84(121)	51.72(60)	48.48(827)
Total	100.00(14)	100.00(13)	-	100.00(1183)	100.00(380)	100.00(116)	100.00(1706)

NO ANGLERS WERE INTERVIEWED

Table 17 - Percentage of anglers in the Prairie Island vicinity using each combination of bait and method, April 30-December 3, 1974

	Still	Troll	Cast	Jig	Mixed
Artificial	6.33	2.64	2.81	*	*
Natural	47.63	12.49	*		*
Prepared	*				
Mixed	16.59	6.10	1.93	*	2.64
Total	70.57	21.21	5.27		2.81

\*  $\leq$  0.5%

Table 18 - Percentage of anglers, using each type of bait, by section in Prairie Island vicinity, April 30-December 3, 1974

TYPES OF BAIT	SECTIONS						TOTAL
	1	2	3	4	5	6	
Artificial	35.71	30.77		14.03	1.84	19.83	12.02
Natural	35.71	53.85	-	54.86	79.21	62.93	60.67
Prepared	-	-	-	-	-	.86	.06
Mixed	28.57	15.38	-	31.11	18.95	16.38	27.26

Table 19 - Percentage of fishermen utilizing various fishing methods,  
by section in the Prairie Island vicinity, April 30-  
December 3, 1974

Section No.	Still	Trolling	Casting	Jigging	Mixed
1	35.71	64.29			
2	69.23	15.38	15.38		
3					
4	80.81	10.06	6.68	.17	2.28
5	47.89	47.89			4.21
6	44.83	43.10	7.76		4.31
Total	70.57	21.22	5.28	.12	2.81



was similar for both years. Estimated fishing pressure declined from 51.2 man-hours per hectare in 1973 to 38.6 man-hours per hectare for the same period in 1974. Harvest of sauger increased in 1974. Total 1974 harvest of all species was slightly greater than in 1973. This increase in total harvest may be attributed to greater average weight of fish in 1974. Sauger comprised about half of the total numbers of fish caught in 1974.

The largest single group of anglers traveled 25 miles or less to fish in the study area. Almost one-third of the anglers came from distances exceeding 150 miles. Anglers came to fish mostly for sauger/walleye or mixed species. Fishing style of the majority of anglers fishing in the Prairie Island vicinity was still fishing with natural bait. More than half of the anglers were men 25 years of age or older.

## LITERATURE CITED

Hawkinson, B W , 1974. 1973 Progress Report on the Prairie  
Island Creel Survey, NSP Environmental Monitoring Program  
Annual Report, 1973.

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