

# PRAIRIE ISLAND NUCLEAR GENERATING PLANT

## ENVIRONMENTAL MONITORING PROGRAM

# 1978 ANNUAL REPORT

#### ECOLOGICAL STUDIES

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# 1978 PROGRESS REPORT ON THE PRAIRIE ISLAND

#### FISH POPULATION STUDY

(2.4)

Prepared for

Northern States Power Company Minneapolis, Minnesota

by

Scott P. Gustafson Joseph L. Geis Carl J. Bublitz LIBRARY Dept of Natural Rosources 500 Latoyotte Road St. Peul, MN 55155-6021

Minnesota Department of Natural Resources Division of Fish and Wildlife Ecological Services Section

April, 1979



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# TABLE OF CONTENTS

2.4.1 INTF	ODUCTION			• •	•	••	•	••	•	•		•	•	2.4-11
2.4.1.	1 <u>Scope</u>	• • •	•••	•••	•	••	•	••	•	•		•	•	2.4-11
2.4.1.	2 <u>Study</u>	Area	• • •	• •	•	• •	•	••	•,	•	•••	•	•	2.4-11
2.4.2 MATE	RIALS AN	D METHO	DS .	• •	•	•••	•	••	•	•	•••	•	•	<b>2.4-1</b> 2
2.4.2.	1 <u>Gear</u>	* * *	• • •	• •	•	••	•	• •	•	• .		•	•	2.4-12
2	.4.2.1.1	Trap	Netti	ng .	•	• •	•	• •	•	•	••	•	ě	<b>2.4-</b> 12
2	.4.2.1.2	<u>Gill</u>	Netti	ng .	•	••	•	• •	•	•		•	•	2.4-13
2	.4.2.1.3	Elect	rofis	hing	•	• •	•	•••	•	•	•••	•	•	2.4-13
2	.4.2.1.4	Trawl	<u>ing</u> .	• •	•	• •	•		•	•	• •	•	•	2.4-13
2	.4.2.1.5	<u>Seini</u>	ng .	• •	•	••	•	• •	•	•	• •	•	•	2.4-13
2.4.2.	2 <u>Taggi</u> r	ng	• • •	• • •	•	•••	•	• •	•	•		•	•	2.4-14
2.4.2.	3 <u>Scale</u>	Sample	<u>s</u>	• •	•	• •	•	• •	•	•	• •	•	•	2.4-14
2.4.2.	4 <u>Popula</u>	ation E	stima	te .	• '	• •	•	•••	•	•	• •	•	•	2.4-15
2.4.3 RESU	LTS		• • •	•••	•	••	•	•	•	•	•	•	•	2.4-18
2.4.3.	1 <u>Gear</u>		• • •	••	•	• •	•		•	•	•	•	•	2.4-18
2	.4.3.1.1	Trap	Nettin	ng .	•	• •	•	•	•	•	•	•	•	2.4-18
2	.4.3.1.2	<u>Gill</u>	Nettin	ng .	•	• •	•	• •	•	•		•	•	<b>2.4-</b> 20
2	.4.3.1.3	<u>Elect</u>	rofisl	ning	•	• •	•	• •	•	•	•	•	•	<b>2.4-</b> 21
2	.4.3.1.4	Trawl	ing .	• •			•		•	•	•	•	•	<b>2.4-</b> 23
2	.4.3.1.5	<u>Seini</u>	ng .	••	•	•	•	• •	•	•	•	•	•	<b>2.4-</b> 24
2.4.3.	2 <u>Taggir</u>	ng Stud	<u>y</u>	• •	•	• •	• •	••	•	• •	•	•	•	<b>2.4-</b> 25
2.4.3.	3 <u>Length</u> Expect	n-weigh ted Wei	t <u>Rela</u> ghts	ation	sh'	ips	and	<u> </u>	•	• •	•	•	٠	2.4-27
2.4.3.	4 <u>Popula</u>	ation E	stimat	<u>te</u> .	•		•		•	• •	•		•	2.4-27

# TABLE OF CONTENTS (Continued)

	Page
2.4.4 DISCUSSION	<b>2.4-</b> 29
2.4.4.1 <u>Abundance Indices</u>	<b>2.4-</b> 29
2.4.4.2 Population Estimates	<b>2.4-</b> 31
2.4.4.3 <u>Impingement</u>	<b>2.4-</b> 35
2.4.5 SUMMARY	2.4-38
2.4.6 ACKNOWLEDGMENTS	2.4-39
2.4.7 LITERATURE CITED	2.4-41

# LIST OF FIGURES

		Page
2.4- 1	Area included in Prairie Island fish population study and creel survey	<b>2.4-</b> 43
2.4- 2	Sampling stations in North Lake (Section 0)	2 <b>.4-</b> 44
2.4- 3	Sampling stations in Sturgeon Lake (Section 1) and in the navigation channel above the Prairie Island Plant (Section 2)	<b>2.4-</b> 45
2.4-4	Sampling stations in the plant area (Section 3)	<b>2.4-</b> 46
2.4- 5	Sampling stations below Lock and Dam 3 (Section 4)	2.4-47
2.4- 6	Area enclosed by blocking seine during May-June 1978 population estimate in discharge area of Prairie Island Nuclear Generating Plant, Red Wing, Minnesota	<b>2.4-</b> 48
2.4- 7	Abundance indices calculated from spring, summer, and fall trap netting, gill netting, electro- fishing, and trawling data for 12 major species in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978	<b>2.4-</b> 49

# LIST OF TABLES

		Page
2.4- 1	Common and scientific names and methods of capture of fish in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978	<b>2.4-</b> 53
2.4- 2	Trap net and gill net stations used from 1975 through 1978 in the Mississippi River and con- necting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota	<b>2.4-</b> 55
2.4- 3	Summary of trap net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring 1978	<b>2.4-</b> 56
2.4- 4	Summary of trap net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, summer 1978	<b>2.4-</b> 57
2.4- 5	Summary of trap net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, fall 1978	<b>2.4-</b> 58
2.4- 6	Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated	<b>2.4-</b> 59
2.4- 7	Summary of gill net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring and fall 1978	2.4-74
2.4- 8	Length-frequencies of all fish caught in gill nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, and 3 combined, seasons separated	<b>2.4-</b> 76
2.4- 9	Summary of day electrofishing catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring 1978	2.4-84

# LIST OF TABLES (Continued)

2.4-10	Summary of day electrofishing catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, summer 1978	<b>4-</b> 85
2.4-11	Summary of day electrofishing catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, fall 19782.	<b>4-</b> 86
2.4-12	Length-frequencies of all fish caught by electro- fishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated 2.	<b>4-</b> 87
2.4-13	Summary of trawling catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring 19782.	<b>4-1</b> 03
2.4-14	Summary of trawling catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, summer 1978 2.	<b>4-1</b> 04
2.4-15	Summary of trawling catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, fall 19782.	<b>4-1</b> 05
2.4-16	Length-frequencies of all fish caught by trawling in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0 and 3 combined, seasons separated 2.	<b>4-1</b> 06
2.4-17	Summary of seining catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring 19782.	<b>4-11</b> 2
2.4-18	Summary of seining catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, summer 19782.	4-113

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# LIST OF TABLES (Continued)

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		Page
2.4-19	Summary of seining catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, fall 1978	2 <b>.4-</b> 114
2.4-20	Length-frequencies of all fish caught by seining in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated	2.4-115
2.4-21	Total numbers of fish tagged and released in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, April 9, 1974 through December 31, 1978, with numbers and percentages of tagged fish returned.	<b>2.4-</b> 126
2.4-22	Recapture location of tagged fish relative to location released in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1974 through 1978	2.4-127
2.4-23	Length-weight relationships for selected species from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. (All sampling sections combined, summer and fall data separated)	<b>2.4-</b> 128
2.4-24	Expected weights for fish of various lengths from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978. Calculated from length-weight relationships for all stations combined	<b>2.4-</b> 129
2.4-25	Summary of results from a multiple mark-recapture population estimate ending June 6, 1978 in the dis- charge area of the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota (Station 3-2)	2.4-132
2.4-26	Abundance indices for 12 fish species using data from all seasons and all gears except seines, from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973 through 1978.	2.4-133

# LIST OF TABLES (Continued)

# Page

2.4-27	Comparison of several population estimates made	
	in the discharge area of the Prairie Island	
	Nuclear Generating Plant, Red Wing, Minnesota,	
	1976 through 1978	<b>2.4-1</b> 34

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#### 2.4.1 INTRODUCTION

This study is part of a continuing comprehensive investigation to determine environmental effects of the Prairie Island Nuclear Generating Plant (PINGP) on fish populations in the Mississippi River and its backwaters near Red Wing, Minnesota.

Several parameters were used to measure changes in the population which might be related to plant operation. These parameters include population structure (e.g., abundance and species composition), fish distribution, and condition. Changes in environmental conditions should be reflected in these parameters.

#### 2.4.1.1 Scope

The total study includes a fish population study and a creel survey; this progress report deals only with the fish population study. The creel survey was not conducted in 1978, but will be resumed in 1979. The report describes field work carried out in 1978 and analyzes data collected. Dates of the regular sampling seasons in 1978 were: "spring", May 31 - July 12; "summer", August 1 - September 6; and "fall", September 12 - October 27.

## 2.4.1.2 Study Area

The five sections of the study area (Figure 2.4-1) are described by Hawkinson (1974). Each section or area consists of 10 numbered stations beginning with zero at the upstream end and ending with nine at the downstream station. Sampling is done at designated sites within stations to eliminate any sampling bias which might result if different sites within a station were sampled each season or year.

However, water stage influences distribution of fishes and may result in some differences in catch between seasons or during the same season in different years. Figures 2.4-2 through 2.4-5 indicate all original sampling sites for each type of gear. Some of these sampling sites are no longer used (see Materials and Methods section).

### 2.4.2 MATERIALS AND METHODS

#### 2.4.2.1 Gear

To monitor the abundance of fish near PINGP, fish were collected using five types of sampling gear: trap net, gill net, boom shocker, trawl, and seine. An illustration of each type of gear can be found in Naplin and Geis (1975). A list of common and scientific names and methods of capture of fishes in the area of PINGP in 1978 is presented in Table 2.4-1. This table also lists previous years in which each species was captured. The sampling schedule is designed so that each type of gear is used during similar calendar periods every year.

#### 2.4.2.1.1 Trap Netting

Since 1975, river trap nets, described by Krosch (1967), were set for four nominal 24-hour periods at each of four stations in Section 0 and 4 and at each of five stations in Sections 1 and 3 (Table 2.4-2), as described by Gustafson and Geis (1977). As in previous years, no trap nets were set in Section 2 because of swift currents and heavy barge traffic. Some of the trap nets set in the main channel in Sections 3 and 4 occasionally rolled because of river currents and waves from river traffic. To prevent rolling, nets were held in place by stakes pounded into the bottom alongside the front frame. Catch data from sets in which the net did not fish properly were not used in calculations.

### 2.4.2.1.2 Gill Netting

Standard 250- X 6-foot experimental gill nets were used in Sections 0, 1, and 3 (Table 2.4-2). Eight nominal 24-hour sets were made in each section by making two nominal 24-hour sets at four stations. Sampling with gill nets was done only during the spring and fall sampling seasons. The stations netted were the same stations used since 1975 (Gustafson and Geis 1977).

#### 2.4.2.1.3 Electrofishing

One 15-minute electrofishing run was made in each station in each section during summer and fall sampling seasons. During the spring sampling season Stations 0-0 through 3-4 (35 stations) were sampled. Stations 3-5 through 4-9 were not sampled because of equipment problems. All runs were conducted during daylight hours. The electrofishing unit was the same used in previous years. Electrical output was regulated by adjusting engine rpm. An output range of 5.5 to 7.0 amperes was most productive; an attempt was made to maintain an output of 6.5 amperes or less.

#### 2.4.2.1.4 Trawling

Trawling was done in the plant intake area, discharge canal, and two stations in North Lake as in 1974 through 1977. A minimum of 15 minutes of trawling in two or more runs was completed in each station with the same trawl used in previous years.

#### 2.4.2.1.5 Seining

Shoreline seining was done in all five sections and was generally restricted to areas with water depth less than 2 m. The seine is 1/4-inch knotless nylon, 50 feet long by

4 feet deep, with a 4-  $\times$  4-  $\times$  4-foot bag. This is the same seine used since 1974. The mean area covered in each seine haul in 1978 was approximately 298 m<sup>2</sup>.

# 2.4.2.2 <u>Tagging</u>

The tagging program initiated in 1974 was continued on a limited scale in 1978. Fish were tagged with model FD-68D Floy spaghetti tags. Each tag consists of a length of yellow vinyl tubing approximately 1/16-inch in diameter with a molded "T" shaped nylon anchor which extends entirely through the tube. Tags were imprinted with the legend, MINN DNR ST PAUL F\_\_\_\_\_, and serially numbered. Tags were applied with a tagging gun described by Naplin and Geis (1975).

In May and June, 124 fish were tagged in the discharge areas as part of the population estimate described later in this report. During the second attempt at a population estimate in July 1978, 28 fish were tagged.

#### 2.4.2.3 Scale Samples

Scale samples were taken during summer and fall sampling periods in 1978. It was estimated that a sample size of about 150 fish would be sufficient for determining population structure (Arthur Peterson 1976, personal communication). Previous sampling data indicated that for some species this sample size could be collected with a single type of gear. For other species a combination of all gear types was needed to get a large enough sample. Aging of the 1978 scale samples was not completed in time to include the age structure data in this report.

#### 2.4.2.4 Population Estimate

Two mark-recapture experiments were performed to estimate the number of fish present in the heated discharge of PINGP during late spring and midsummer 1978. Fish from Station 3-2 (Figure 2.4-6), the discharge area, were collected during the two experiments. The first attempt was started May 23 and continued nine days through June 6, 1978. The second attempt was started July 18 and fish were collected five days through July 26, 1978.

Before sampling for the first population estimate began, an attempt was made to block off part of the heated discharge area with a 16-foot (4.9 m) deep 1 1/2 inch (3.8 cm) bar measure mesh seine. About 1.4 ha were enclosed by the seine (Figure 2.4-6). The portion of the discharge area where the seine was placed is about 3 m maximum depth. The lead line was a rope with approximately 18 kg concrete anchors attached at 1.5 to 3 m intervals. In areas with swift current, the anchors were spaced at narrow intervals, while wider intervals were used in areas with little current. Scuba divers inspected the seine the same day it was set and found the bottom of the seine as much as 15 cm above the bottom of the discharge canal. The seine was removed after the last sampling day of this experiment (June 6).

Starting on May 23, fish were collected by AC electrofishing and trap netting, and on the last sampling day by gill netting. The boom shocker, trap nets, and gill nets were the same ones used for the regular population study. Sampling was done throughout the enclosed area. Most electrofishing runs were along shorelines, because the electrofishing gear is only effective to a depth of approximately 2 m. A second population estimate was attempted during July 1978. No attempt was made to block off the discharge canal with a seine. We felt the seine may have been unsuccessful in preventing movement into or out of the enclosed area during the previous estimate because of the open space between the seine and the bottom of the discharge canal. Trap nets were set on July 17 and lifted on July 18. A pulse DC boom shocker was used to collect fishes on July 19, 20, 24, 25, and 26. The sampling was terminated because few fish were collected and no marked fish were recaptured.

More than one type of gear was used during the population estimates to maximize the number of fishes sampled. One advantage of using more than one type of gear in a population estimate is that each gear has a slightly different selectivity for size and species. A wider range of sizes and species is likely to be collected as the number of different gears increases. A second advantage is that there is less likely to be selection for or against fish which have already been collected and released. Ricker (1975) recommends using a different gear to capture fish for marking than is used for recapturing fish. Since this was a multiple mark-recapture experiment, it was not possible to follow this recommendation completely.

As fish were collected they were placed in a holding tank in the boat until they were measured and marked. The following eight species were marked with Floy tags or fin-clips: carp, channel catfish, flathead catfish, white bass, smallmouth bass, sauger, walleye, and freshwater drum. No fish less than 190 mm total length were marked. All carp and freshwater drum 190 mm or greater were fin-clipped. Channel catfish 190 mm through 299 mm were fin-clipped, while those 300 mm and over were tagged. For the other species, individuals from 190 mm through 249 mm were finclipped, while those 250 mm or greater were tagged. Fish which were severely deformed, diseased, or which appeared to be highly stressed were not marked. All recaptures during sampling were recorded.

A population estimate by species was made using the method of Schnabel (1938) as modified by Chapman (1952, 1954), and cited by Ricker (1975) using the following equation:

$$N = \sum_{k=1}^{(c_{t} M_{t})}$$

Ricker (1975) defines these symbols as follows:

N = size of population at time of marking

M = total number of marked fish at large at the start of the t<sup>th</sup> day (or other interval), i.e., the number previously marked less any accidentally killed at previous recapture.

C\_ = total sample taken on day t

 $R_{\perp}$  = number of recaptures in the sample  $C_{\perp}$ 

 $R = \sum R_{+}$  = total recaptures during the experiment.

A symbol not mentioned specifically by Ricker, but which is useful in tabulations, is  $M_i$ , where

M; = number of fish tagged on day i.

Ricker (1975) suggests dividing the fish into two or more length groups to make a more accurate population estimate. However, because of the low numbers of returns during the May-June 1978 population estimate, it was not statistically advantageous to use more than one length group.

Population estimates were calculated only for carp, white bass, walleye, and freshwater drum, because few individuals of the other species were marked and/or recaptured. Ninetyfive percent confidence intervals were calculated for these four species. Confidence intervals were calculated using Appendix II in Ricker (1975).

Weights for carp, white bass, walleye, and freshwater drum were calculated using respective 1978 summer length-weight equations and lengths measured at the time fish were tagged. These weights were used to calculate an average weight per fish of each species. The average weights were used to calculate standing crops for respective species.

2.4.3 RESULTS

2.4.3.1 Gear

#### 2.4.3.1.1 Trap Netting

During 1978 a total of 6,322 fish representing 36 species were caught in 201 nominal 24-hour trap net sets. Tables 2.4-3 through 2.4-5 summarize trap net catches by area and season. Table 2.4-6 is a length-frequency of fishes caught with trap nets during 1978.

The following six species comprised 83.5 percent of the total trap net catch: black crappie (24.5 percent), white bass (19.1 percent), freshwater drum (16.5 percent), carp (9.1 percent) white crappie (8.1 percent), and bluegill (6.2 percent).

The total catch of black crappie was higher during summer (467) and fall (890) than during spring (195). The catch rate (number of fish per lift) for summer and fall was highest below Lock and Dam 3, 7.79/lift and 25.40/lift,

respectively, but in spring was lowest below Lock and Dam 3 (1.09/lift). During summer and fall, the lowest black crappie catch rate was obtained in the plant area, 6.60/lift and 3.70/lift, respectively. The highest spring catch rate occurred above PINGP (4.33/lift).

The total catch of white bass increased from 262 in spring, to 360 in summer, and to 584 in fall. The catch rate for summer and fall was highest in the plant area, 8.05/lift and 9.35/lift, respectively, but in spring was lowest in the plant area (1.95/lift). During summer and fall, the lowest white bass catch rate was obtained below Lock and Dam 3, 2.07/lift and 7.40/lift, respectively. The highest spring catch rate for white bass occurred above PINGP (6.06/lift).

The total catch of freshwater drum for spring (535) was more than double either summer (263) or fall (246) catches. The catch rate for spring and fall was highest below Lock and Dam 3, 16.64/lift and 6.13/lift, respectively. The highest summer catch rate occurred in the plant area (6.35/ lift). During each season the catch rate was lowest above PINGP (1.79/lift to 2.44/lift).

The total catch of white crappie increased from 147 in spring to 200 in fall. The catch rate for spring and fall was highest in the plant area, while during summer the catch rate was highest below Lock and Dam 3. The catch rates for white crappie ranged from 0.82/lift to 5.30/lift.

The total catch for carp was higher during spring (262) and summer (184) than during fall (132). During spring the highest catch rate for carp was above PINGP, and during summer and fall it was highest below Lock and Dam 3. Catch rates for carp ranged from 0.30/lift to 5.39/lift. Total catch for bluegill ranged from 101 in spring to 178 in summer. Catch rates ranged from 0/lift to 6.71/lift.

Catch rates of both sauger and walleye were low in all areas during 1978 trap netting. Catch rates for sauger ranged from 0.09/lift to 0.65/lift and for walleye from 0.14/lift to 1.09/lift.

#### 2.4.3.1.2 Gill Netting

A total of 2,505 fish of 28 species were captured in 48 nominal 24-hour gill net sets during 1978. Spring gill netting accounted for 64.9 percent of the total number of fish caught by gill nets in 1978. Gizzard shad were the most commonly caught fish, totaling 33.9 percent of the combined spring and fall catch. Gizzard shad were more than twice as abundant as the second most abundant species (white bass), which comprised 13.6 percent of the total catch. Other important species were sauger (8.3 percent), freshwater drum (6.1 percent), carp (5.9 percent), and shorthead redhorse (5.7 percent). Table 2.4-7 summarizes gill net catches by area and season and Table 2.4-8 lists lengthfrequencies of gill net-caught fishes.

The highest catch rate for gizzard shad was in the plant area during fall, 40.25 fish per 24-hour gill net set (40.25/lift). Spring catch rates were 15.06/lift above PINGP and 12.63/lift in the plant area. The lowest catch rate was 11.56/lift during fall above PINGP. The majority of gizzard shad caught in gill nets in spring were yearlings and adults, whereas most of those caught during fall were from the 1978 year class.

White bass catch rates were higher during spring than during fall. During spring 14.69/lift were caught above PINGP,

while 6.25/lift were caught in the plant area. Fall catch rates declined to 2.31/lift and 2.38/lift, respectively.

Carp were most abundant during spring above PINGP where the catch rate was 6.50/lift. In the plant area 3.38/lift were caught during spring. The lowest catch rate was 0.50/lift in the plant area during fall.

Sauger was the third most abundant species in the 1978 gill net catch. Catch rates both above and in the plant area were similar ranging from 3.88/lift to 5.38/lift for spring and 4.50/lift to 4.00/lift for fall, respectively.

Most freshwater drum collected in gill nets in 1978 were taken during spring; the catch rates were 5.00/lift above PINGP and 4.38/lift in the plant area. Lowest catch rates for freshwater drum were found above PINGP, 0.88/lift during fall.

Highest shorthead redhorse gill net catches were in spring, 5.00/lift above PINGP and 6.00/lift in the plant area. The lowest catch rate for shorthead redhorse was 0.63/lift above PINGP during fall.

#### 2.4.3.1.3 Electrofishing

In 1978, 5,500 fish of 39 species were collected during 33.75 hours of day electrofishing. The 1978 catch represented a decrease of 4,402 fish from the corresponding 1977 catch. Part of this decline resulted from electrical generator problems which prevented spring sampling in part of the plant area and below Lock and Dam 3. Five species accounted for 73.4 percent of the total 1978 electrofishing catch: gizzard shad (23.3 percent), freshwater drum (17.3 percent), bluegill (12.6 percent), carp (10.9 percent), and emerald shiner (9.3 percent). Four other species totaled

14.5 percent of the catch: white bass (6.3 percent), small mouth bass (3.6 percent), sauger (2.6 percent), and shorthead redhorse (2.0 percent). Tables 2.4-9 through 2.4-11 summarize day electrofishing catches by season and area. Length-frequencies of all fishes caught by electrofishing during 1978 are listed in Table 2.4-12.

Total electrofishing catch of gizzard shad in 1978 (1,280) represented a substantial drop from the corresponding 1977 catch (4,782). This decline resulted partially from a reduction in the catch of young-of-the-year fish in 1978. Catch rates for gizzard shad generally increased as the sampling year progressed, probably because young-of-the-year gizzard shad became more vulnerable to electrofishing. Catch rates of gizzard shad ranged from 3.20 fish per hour (3.20/hour) in the plant area during spring to 88.40/hour below Lock and Dam 3 during fall.

Freshwater drum ranked second among the species most commonly caught by electrofishing. Except during fall, catch rates for freshwater drum were higher in above-plant areas than in other sections. Catch rates ranged from 2.40/hour in the plant area during both spring and fall to 58.67/hour above the plant during summer.

Highest catch rates for bluegills occurred in the plant area (62.80/hour) and below Lock and Dam 3 (64.80/hour) in the fall. The lowest catch rate occurred in fall above PINGP (5.33/hour). Spring and summer catch rates for bluegill ranged from 7.20/hour to 38.00/hour.

Catch rates for carp ranged from 9.60/hour in the plant area during spring to 44.00/hour below Lock and Dam 3 during fall.

Emerald shiners were caught least frequently in spring above the plant and most frequently in summer below Lock and Dam 3. Catch rates ranged from 2.40/hour to 69.60/hour, respectively.

#### 2.4.3.1.4 Trawling

During 1978, 427 fish representing 19 species were collected during 3.00 hours of trawling. The 1978 catch represented a sharp decline from the corresponding 1977 trawling catch (5,944). Most of this decline was due to an unusually large catch of young-of-the-year gizzard shad in 1977 (4,486) followed by a small catch (42) in 1978. The following five species accounted for 85.7 percent of the 1978 trawling catch: white crappie (26.9 percent), freshwater drum (21.3 percent), black crappie (19.7 percent), gizzard shad (10.1 percent), and bluegill (7.7 percent). Tables 2.4-13 through 2.4-15 summarize trawling catches by season. Length-frequencies of fishes collected by trawling in 1978 are listed in Table 2.4-16.

Of 115 white crappie caught by trawling during 1978, 79 (68.7 percent) were young-of-the-year. White crappie were most abundant in summer (79) and fall (27) trawl catches. For both seasons the catch came exclusively from North Lake. The only plant area catch of white crappie occurred in spring, accounting for four of the nine white crappie caught during that season.

Freshwater drum were most abundant in summer trawl catches (63). For all seasons combined, 53 freshwater drum were caught in North Lake and 38 in the plant area.

Of 84 black crappie caught trawling during 1978, 81 were caught above PINGP. All but one of the 43 gizzard shad caught by trawling were young-of-the-year. Trawling catches

of bluegill (33) were limited to summer and fall seasons above PINGP.

# 2.4.3.1.5 <u>Seining</u>

In 1978, 2,093 fishes were collected by 47 seine hauls, which covered an estimated total surface area of 1.40 ha. Twenty-nine species were collected. Four species comprised 76.9 percent of the total catch: emerald shiner (36.0 percent), gizzard shad (21.5 percent), white bass (10.3 percent), and spottail shiner (9.1 percent). Tables 2.4-17 through 2.4-19 summarize seine catches by area and season. Length-frequencies of all fishes collected by seining in 1978 are listed in Table 2.4-20.

High catches of emerald shiner below Lock and Dam 3 in spring caused that species to be most abundant in the total 1978 catch. In spring the emerald shiner catch rate was 4,225.00 fish per hectare (4,225.00/ha) below Lock and Dam 3. For each season, catch rates of emerald shiner were highest below Lock and Dam 3 (ranging from 350.00/ha to 4,225.00/ha). The lowest spring catch rate occurred in the plant area (137.50/ha), while lowest summer and fall catch rates occurred above PINGP (36.00/ha and 144.83/ha).

Gizzard shad was the second most abundant species in the 1978 total seining catch. Most of these gizzard shad were young-of-the-year. The highest catch of gizzard shad was 2,475.00/ha during spring in the plant area. The lowest spring catch rate for gizzard shad was 300.00/ha below Lock and Dam 3. Seining during summer and fall above PINGP yielded lower numbers of gizzard shad per hectare than the Catches of gizzard shad above the plant other two areas. declined from 374.07/ha during spring to 27.59/ha during fall. In the plant area the gizzard shad catch increased from 116.67/ha during summer to 400.00/ha during fall. The

catch below Lock and Dam 3 decreased from 458.33/ha during summer to 42.86/ha during fall.

White bass young-of-the-year were readily caught by seining during the spring sampling season, but became less abundant in seine hauls as the year progressed. White bass was the third most abundant species in spring seine hauls, comprising 12.9 percent of the total spring seine catch. The highest white bass catch rate by seining was 687.50/ha in the plant area during spring. In the same area the catch rate of white bass was 50.00/ha during summer and 14.29/ha in fall.

The total catch of spottail shiners was highest during spring (88), followed by summer (77) and fall (26). For each season, catch rates for spottail shiner were lowest below Lock and Dam 3 (ranging from 0/ha to 8.33/ha) and highest in the plant area (ranging from 100.00/ha to 837.50/ha).

#### 2.4.3.2 Tagging Study

A total of 150 fish were tagged during 1978 as part of the Prairie Island fish study. July 26 was the last date fish were tagged in 1978. Channel catfish was the most commonly tagged species (66), and white bass (35) the second most commonly tagged species. Tags returned in 1978 included fish tagged in 1978 as well as fish tagged in previous years.

A total of 5,940 fishes were tagged from April 9, 1974 through December 31, 1978. During this period, 676 tags were returned, an overall tag return rate of 11.4 percent. Species with the highest number of tags returned were white bass (347), sauger (131), and walleye (122). Table 2.4-21 summarizes the number of each species tagged and the number of tags returned for the period April 9, 1974 through December 31, 1978. Largemouth bass had the highest tag return rate (22.73 percent), but the total number tagged was small (22). Northern pike had the second highest tag return rate (21.00 percent). Approximately one-half of northern pike recaptured were caught in sampling gear while conducting the fish population study. For other species the majority of tags returned were reported by anglers.

Table 2.4-22 summarizes movements of fish tagged and recaptured from 1974 through 1978. Of eight species of fishes recaptured, northern pike, channel catfish, white bass, largemouth bass, sauger, and walleye showed a net downstream movement; flathead catfish showed no net movement; and smallmouth bass exhibited a net upstream movement. Channel catfish exhibited the greatest mean net downstream movement (24.4 miles per fish). During 1978, however, an angler-caught channel catfish was reported from the Minnesota River 128 miles upstream from the location where it was tagged. Sauger had the second largest mean net downstream movement (11.6 miles). Mean net downstream movement of walleye, northern pike, white bass, and largemouth bass ranged from 0.2 to 4.6 miles.

The mean net downstream movement displayed by these fish may, at least partly, be an artifact of the data. The primary source of tag return data has been anglers. Since angling pressure is not randomly distributed (Gustafson et al. 1978b), the recapture locations of tagged fish may not be representative of actual tagged fish distribution. For example, there is little fishing pressure between Lock and Dam 3 and Prescott, Wisconsin. Tagged fish may be present in this area, but they are not likely to be recaptured because of low fishing pressure there.

#### 2.4.3.3 Length-Weight Relationships

Separate length-weight relationships of 14 species were calculated for summer and fall. Data from all sections and gears were combined to calculate length-weight relationships (Table 2.4-23).

Expected weights for 14 species at specific lengths were calculated using the length-weight equations from 1978. Table 2.4-24 lists the 1978 expected weights plus expected weights based on length-weight equations from one or more previous years. Analysis indicates that expected weights at a given length may vary as much as 24.0 percent from year to year. However, there is no apparent trend in expected weights for any of these species.

#### 2.4.3.4 Population Estimate

During the May-June multiple mark-recapture sampling, 13 freshwater drum, 3 carp, 2 white bass, 2 walleye, and 1 sauger were recaptured. Population estimates were made for carp, white bass, walleye, and freshwater drum. The estimates for the last sampling date (June 6) were used as the final estimates because they were considered the most accurate. The maximum number of marked fish were at large on the last sampling day. Ninety-five percent confidence intervals are used in this section. Table 2.4-25 lists details of the estimate calculations.

The estimated number of carp in the enclosed area was 2,587, with confidence limits of 1,057 to 6,463. The area enclosed by the blocking seine, as determined by planimeter, was 1.4 ha. The density of carp in the enclosed area was 1,848 fish/ha with confidence limits of 755 fish/ha to 4,616 fish/ha. The mean weight of carp collected in the enclosed

area was 1.60 kg. The estimated standing crop of carp in the enclosed area was 2,957 kg/ha.

There were an estimated 54 white bass (38.6 fish/ha) with a confidence interval of 23 to 127 (16.4 to 90.7 fish/ha) in the enclosed area during the May-June study. The mean weight of the 17 white bass marked during the study was 0.30 kg. The estimated standing crop of white bass in the enclosed area was 12 kg/ha.

An estimated 81 walleye with a confidence interval of 34 to 216 fish were present in the enclosed area of discharge canal during the study. The mean weight of the 21 marked walleye was 1.20 kg, which resulted in an estimated standing crop of 70 kg/ha.

The estimated number of freshwater drum in the enclosed area was 3,682 (2,630 fish/ha) with confidence limits of 2,202 to 6,483 (1,573 to 4,631 fish/ha). The mean weight of the 317 marked drum was 0.26 kg, which resulted in an estimated standing crop of 684 kg/ha.

No estimate was made for sauger, because just three sauger were marked and only one was recaptured. Five smallmouth bass, 18 flathead catfish, and 77 channel catfish were marked during the May-June study, but none were recaptured.

During the July estimate there were more carp marked (55) than any other species. Freshwater drum was the second most commonly marked species (34). In addition, 32 white bass, 5 sauger, 4 smallmouth bass, 2 channel catfish, and 1 flathead catfish were marked. Population estimates were not made for the July mark-recapture attempt, because none of the fish marked during the July study were recaptured during that study.

#### 2.4.4 DISCUSSION

#### 2.4.4.1 Abundance Indices

Abundance indices measure abundance of major fish species in each year relative to a base period. This method of handling catch data was devised by Hile (1962); calculations and applications to the Prairie Island fish study were explained by Naplin and Geis (1975).

In 1978 data from all seasons and sections and all gears except seining were used in calculating abundance indices. The four-year period, 1973 through 1976, was used as the base period. Mean catch rates from this base period were used to calculate expected catches for 1978. Twelve species, important in the catch during previous years, were selected for abundance comparisons: shortnose gar, gizzard shad, northern pike, carp, shorthead redhorse, white bass, bluegill, white crappie, black crappie, sauger, walleye, and freshwater drum.

Abundance indices for most species varied considerably from year to year. Table 2.4-26 lists the abundance indices for 12 species from 1973 through 1978.

For each of the above 12 species, the abundance index for each year was plotted against time. The equation for the linear regression of abundance indices versus time was calculated using the least squares method and the correlation coefficient (r) was computed for each regression equation (Figure 2.4-7). These calculations were made to determine whether trends in abundance could be noted.

Abundance indices for northern pike and sauger showed statistically significant declines at the 95 percent level.

With six years of data (four degrees of freedom) a correlation coefficient (r) must have an absolute value of 0.811 or greater to be significant at the 95 percent level. Northern pike has shown the most consistent decline of any of the 12 species (r = -0.941), even though the 1978 abundance index for this species was up slightly from 1977.

Sauger have also declined significantly since 1973. The correlation coefficient for this species was -0.828. The abundance index increased from 0.40 in 1977 to 0.78 in 1978. Additional data will be needed to determine whether or not this increase signals a real change from the downward trend of previous years.

Black crappie is the only species that has shown a statistically significant increasing trend in abundance indices since 1973. Abundance indices for black crappie were relatively constant from 1973 through 1976 (0.91-1.11); they then increased by a factor of three to 1977 and 1978 levels of 3.31 and 3.39. The 1977 and 1978 abundance indices increases were due to a great increase in trap net catches. Although the data indicate a significant change in abundance, it appears that the change was not linear, and the data points could be better fit by a sigmoid curve.

Of the remaining nine species, white crappie was closest to having a significant trend with a correlation coefficient of 0.695. The decline in abundance indices from 1977 to 1978 resulted in a decrease from the correlation coefficient of 0.801 reported by Gustafson et al. (1978a).

Abundance indices for shortnose gar, gizzard shad, carp, shorthead redhorse, white bass, bluegill, white crappie, walleye, and freshwater drum showed no significant trends from 1973 through 1978. Eight of these species had correlation coefficients having absolute values of 0.485 or less.

Abundance indices for these eight species varied considerably during the six years. Abundance indices for shortnose gar, gizzard shad, bluegill, and white crappie showed a considerable decline from 1977 to 1978, while abundance indices for carp, shorthead redhorse, white bass, and freshwater drum declined slightly between 1977 and 1978.

#### 2.4.4.2 Population Estimates

Population estimates for carp, white bass, and walleye in the discharge canal from the May-June 1978 mark-recapture study were lower than estimates for these species in previous mark-recapture studies. For example, the December 1976 estimate for carp was about 9,100 compared with about 2,600 for the June 1978 estimate. Numbers of carp marked in these two years were similar. The confidence interval for the 1976 estimate was extremely wide, because only one Three marked carp were remarked carp was recaptured. captured during the 1978 estimate resulting in a narrower confidence interval. Confidence intervals for these two estimates overlap, so it is possible that there is no real difference between the estimates (Table 2.4-27). The 1976 estimates may be overestimated or underestimated, because there was no physical barrier to restrict movement into or out of the discharge canal. We feel, however, temperature differences between the thermal discharge and ambient river water tended to restrict movement into or out of the discharge canal. It is also possible that carp and other species involved in the May-June 1978 estimate were able to move into or out of the enclosed area by swimming under the blocking seine.

The estimate of white bass in the May-June 1978 study was 54, compared with 4,632 in December 1977 and 7,051 in December 1976 (Table 2.4-27). During the 1978 mark-re-capture study, only 17 white bass were marked compared with

727 in the 1977 study and 508 in the 1976 study. It is apparent that there were many more white bass in the discharge area during December 1976 and December 1977 than were there during May-June 1978.

Christenson and Smith (1965), as cited by Peterson (1975), report an average standing crop of 68 pounds/acre (76.4 kg/ha) of game fishes in Mississippi River backwaters. The December 1976 standing crop estimate of white bass in the discharge canal, a portion of which is a flowing slough, was 345.5 kg/ha (Gustafson and Geis 1977). The December 1977 estimate was 228.3 kg/ha (Gustafson et al. 1978). The December 1977 standing crop estimate for white bass is over 3.3 times higher and the December 1976 estimate is over 5 times higher than the average standing crop of all game fishes (76.4 kg/ha) reported above. Since white bass make up only a portion of the average standing crop of game fishes in Mississippi River backwaters, the 1976 and 1977 values are considerably more than 5 and 3.3 times the average standing crop of white bass. These data indicate that white bass are attracted to the warm water discharge of the Prairie Island Plant during at least December. Observed angling success during January, February, and March in the discharge canal indicates that white bass are also attracted to the warm water during these months.

The June 1978 estimated standing crop of 12 kg/ha of white bass in the discharge canal is probably within the range that might be expected for Mississippi River backwaters. Catch data from trap netting, gill netting, and electrofishing above the plant during all three sampling seasons in 1978 indicate that white bass are about one-third of the game fish by numbers.

Dennis Heisey, Minnesota Department of Natural Resources (personal communication 1979), indicated he felt we should

make population estimates from the 1978 mark-recapture data even though the sample sizes are small. Mr.Heisey felt we should present the estimates and include our evaluation of the estimates, and readers could then make their own evaluations of the estimates to determine if the data suit their needs.

Gustafson et al. (1978) reported that no population estimate was calculated for walleye from the December 1977 data, because the authors believed the number marked and/or returned was insufficient to make a reliable estimate. Since the 1977 data have larger sample sizes than the 1978 data, we decided to calculate a population estimate for walleye using unpublished data from December 1977. The December 30, 1977 estimate of walleye in the discharge canal is 306 with 95 percent confidence limits of 137 and 766 fish. The total number of marked walleye was 50 and the number recaptured was four (Table 2.4-27).

We feel that the sampling methods used, electrofishing and angling, were not selective toward marked or unmarked fish. Movement of fish into or out of the discharge canal should have been somewhat restricted by temperature. The small sample size and variability in catch from day to day resulted in the wide confidence limits.

The June 6, 1978 mark-recapture estimate of 81 walleye was considerably less than the December 8, 1976 estimate of 1,053 walleye and was also less than the December 30, 1977 estimate of 306 (Table 2.4-27). It is our opinion that the low number of walleye present in the discharge during the May-June mark-recapture study was at least partially attributable to high temperatures.

For May 22, 1978, the date the blocking seine was installed, the plant log indicated a temperature of 82.8°F (28.2°C) at

the discharge gates and 74.2°F (23.4°C) at a resistance thermal device (RTD) about 40 m from the gates. These temperatures are above those preferred by walleye, according to several authors. Koenst and Smith (1976) estimated the preferred temperature for walleye and sauger juveniles to be They cite Hile and Juday (1941) as saying that the 22°C. preferred temperature of adult walleye in summer is 20.6°C. Eddy and Underhill (1974) state that when surface water warms above 22.2°C, walleye seek cooler water. Dendy (1948) reported that in Norris Reservoir during July, walleye would be in 25°C water when oxygen concentration was sufficient. Temperatures in the discharge area were higher than the preferred temperatures for walleye stated by most of these authors. We believe most walleye had probably sought cooler temperatures most those in the discharge, and few walleye were in the discharge area when it was enclosed by the blocking seine.

During the May-June mark-recapture study, 317 freshwater drum were marked and 13 were recaptured. The estimate of 3,682 freshwater drum for the 1978 study (Table 2.4-27) indicates this species was abundant in the enclosed area. No attempt had been made to mark freshwater drum during the 1976 or 1977 studies, so there are no data for comparison with the 1978 estimates.

The authors anticipated that few fish would be present in the discharge canal during the summer because of high water temperatures. To verify this hypothesis, a mark-recapture study was attempted in the discharge canal from July 17 through July 26, 1978. The study was terminated because low numbers of fish were being collected. No population estimates could be made because no marked fish were recaptured. However, the low numbers of fish collected during sampling with trap nets and electrofishing indicate that low numbers of fish were present in the discharge area.
Temperature information from the plant log indicates that from July 18 through July 26, 1978 the temperature at the discharge gates ranged from 79.4° to 89.9°F (26.3° to 32.2°C). Temperatures at the close in RTD ranged from 76.2° to 86.2°F (24.6° to 30.1°C). Most warm water fishes would be expected to avoid these temperatures and seek cooler water.

### 2.4.4.3 Impingement

From 1974 through 1977, six species, gizzard shad, channel catfish, white bass, black and white crappie, and freshwater drum have comprised over 91 percent of the fish impinged each year on the traveling screens at PINGP. During 1978 these six species comprised over 97 percent of the fish impinged. Overall catch rates and abundance indices for these six species were compared with impingement data.

A total of 105,983 fishes were impinged on the traveling screens at PINGP during 1978. This is slightly higher than the number impinged in 1975 (93,466), but considerably lower than the number impinged in 1974 (146,063), 1976 (261,294), and 1977 (554,590). Impingement information in this section is from Andersen (1975), Mayhew and Hess (1976), Eberley (1977), Eberley (1978), and Section 2.3 of this report.

The total number of gizzard shad impinged each year was 136,667 in 1974; 70,506 in 1975; 152,878 in 1976; 456,949 in 1977; and 93,895 in 1978. The number impinged and electrofishing and trawling catch rates were higher in 1977 than any other year. There does not appear to be any consistent relationship between electrofishing and trawling catch rates for other years and the number of gizzard shad impinged that year. There is no apparent relationship between abundance indices and number of gizzard shad impinged from 1974 to 1976. However, from 1976 to 1977, both the abundance index and the number of impinged gizzard shad increased sharply. During 1977 large numbers of young-of-the-year gizzard shad were collected during the population study and by impingement. From 1977 to 1978 both impingement and the abundance indices for gizzard declined markedly. Only about nine percent of the gizzard shad impinged in 1978 were from the 1978 year class; most of the remainder were from the 1977 year class. These data do not indicate any consistent trends between gear catches or abundance indices and the number of gizzard shad impinged at Prairie Island.

Freshwater drum (3,463) comprised 3.3 percent of the fish impinged in 1978. This is one-tenth the number impinged in 1976 (34,380), and less than one-twentieth the number impinged in 1977 (74,422). Electrofishing catch rates above the plant during spring were higher in 1978 than they were Incomplete 1978 spring electrofrom 1974 through 1977. fishing in the other two sampling areas precluded further comparisons. For all areas, summer 1978 electrofishing catches of freshwater drum were lower than in 1977, while fall catches in 1978 were higher than in 1977. Trawling catches of freshwater drum in the plant area were lower in 1978 than in all other years. There is no consistent relationship between gear catch rates and impingement of freshwater drum at PINGP.

A total of 2,096 white bass (2.0 percent of the total impingement) were impinged at PINGP in 1978. Over twentyone times as many white bass were impinged in 1976 (44,638). The 1976 catch rates in the plant area during the three seasons ranged from one and one-half to over four and one-half times as high as in 1978. The abundance index for white bass in 1974 was higher than the 1976 abundance index, but 1,367 white bass were impinged in 1974 compared with 44,638 in 1976. In 1975, 2,712 white bass were impinged, but the 1975 abundance index was lower than either the 1974 or 1976 indices. The abundance index for 1977 was similar to 1976, but over four and one-half times as many white bass were impinged in 1976 as in 1977. There is no apparent relationship between abundance indices and the number impinged.

A total of 2,032 channel catfish were impinged in 1978 compared with 3,977 in 1977; 8,457 in 1976; 6,223 in 1975; and 637 in 1974. Trawling catches of channel catfish in the plant area were 3 in 1978, 61 in 1977, 465 in 1976, 3 in 1975, and 23 in 1974. Comparison of impingement and trawling catch rates in the plant area indicates no consistent relationship.

A total of 1,551 white and black crappies were impinged in 1978 compared with 5,530 in 1977; 6,852 in 1976; 2,030 in 1975; and 1,704 in 1974. Abundance indices for each year for both white and black crappies showed no consistent relationship with the numbers impinged. Abundance indices showed a considerable increase from 1976 to 1977 for both white and black crappies, but the number impinged declined. From 1977 to 1978, the abundance index for white crappie declined and for black crappie rose slightly, while impingement of crappies declined by 72 percent.

Some of the dissimilarity between numbers of fish impinged and abundance indices might result from size selectivity of the sampling gear. It has been observed (Eberley 1977) that impingement affects primarily the smaller size classes of fishes at PINGP. Trap nets, gill nets, and electrofishing gear do not sample small fish as efficiently as larger fish. Density and distribution of fish near a plant intake

also have a great influence on the number of fish impinged (Sharma 1978). Abundance indices presented in this report indicate the density of organisms in the study area in a given year. However, abundance indices may not be representative of the density and distribution of fish near the intake. Also, distribution of fish changes throughout the year. There appears to be no consistent relationship between gross impingement in a given year and overall gear catch rates or abundance indices from that year.

# 2.4.5 SUMMARY

A sixth season of sampling was conducted in 1978 to determine the effects of the Prairie Island Nuclear Generating Plant (PINGP) near Red Wing, Minnesota on the fish population of the Mississippi River in the vicinity of the plant. Five types of sampling gear, trap nets, gill nets, boom shocker, trawl, and minnow seine, were used to collect fishes to monitor changes in the population. Using these five gears, 16,846 fish were collected during the regular sampling season. This is slightly less than one-half the number of fish collected during similar sampling in 1977. Additional fish were collected during two multiple markrecapture studies in 1978.

From April 9, 1974 through December 31, 1978 a total of 5,940 fish were tagged with Floy spaghetti tags. During this period, information on 676 tag returns was received -- an overall tag return rate of 11.4 percent. Tag return information for northern pike, channel catfish, white bass, largemouth bass, sauger, and walleye showed a net downstream movement; flathead catfish showed no net movement; and smallmouth bass showed a net upstream movement.

Data from 1973 through 1978 were used to calculate abundance indices for 12 species of fishes. Data from trap nets, gill

nets, trawling, and electrofishing from all seasons and all stations were used in these calculations. Abundance indices for northern pike and sauger showed statistically significant declines at the 95 percent level for the six-year period. Black crappie is the only species showing a statistically significant increasing trend for the six-year period. Abundance indices for shortnose gar, gizzard shad, carp, shorthead redhorse, white bass, bluegill, white crappie, walleye, and freshwater drum varied considerably during the six years. Correlation coefficients for these nine species indicated no significant trends in abundances from 1973 through 1978.

Population estimates for carp, white bass, and walleye in the discharge canal from a multiple mark-recapture study from May 22 through June 6, 1978 were lower than estimates for these species from December 1976 or December 1977. Data from an attempted multiple mark-recapture study in the discharge canal from July 17 through July 26, 1978 indicated that few fish were present in the discharge canal during that period.

Six species, gizzard shad, channel catfish, white bass, black and white crappie, and freshwater drum, have comprised over 91 percent of the fishes impinged each year on the traveling screens at PINGP. Catch rate data and abundance indices for these six species from 1974 through 1978 were compared with impingement rates for the respective years. These comparisons indicated no consistent relationships between catch rates and/or abundance indices and the number of fishes impinged at PINGP during respective years.

### 2.4.6 ACKNOWLEDGMENTS

We wish to thank the following people for their help in preparing this report. George Clymer and Harlan Fierstine helped collect, compile, and summarize data for this report. Chris Tomford helped with field work. Dennis Heisey assisted with statistical treatments and computer data processing. Howard Krosch helped with data analysis and experimental design as well as reviewing early drafts of this manuscript. Arthur Peterson provided advice on data analysis. Data entry operators of Minnesota Department of Natural Resources, Bureau of Management Systems, keypunched most of the raw data collected in 1978. Sharon Flynn, Jeanne Somero, Betty Thill, Jane Uphus, and Laurie Zitzman typed tables and early drafts of this report.

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NORTH LAKE

section O, stations O-O through  $O-9^{\circ}$ 











Figure 2.4-6 Area enclosed by blocking seine during May-June 1978 population estimate in discharge area of Prairie Island Nuclear Generating Plant, Red Wing, Minnesota.



Figure 2.4-7 Abundance indices calculated from spring, summer, and fall trap netting, gill netting, electrofishing, and trawling data for 12 major species in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978.



Figure 2.4-7 Abundance indices calculated from spring, summer, and fall trap netting, gill netting, electrofishing, and trawling data for 12 major species in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota 1973-1978 (cont.).



Figure 2.4-7 Abundance indices calculated from spring, summer, and fall trap netting, gill netting, electrofishing, and trawling data for 12 major species in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978 (cont.).

Θ 0 Black crapple Sauger 2.0. 3.0 y = 0.554x - 0.166y = -0.212x + 1.6860 r = 0.849Abundance Index r = -0.828Abundance Index (See Discussion) 0 1.0. 1.5-Ο Ô 0 0 Ο 0 0 Λ Т '78 **'**73 '75 '76 '77 **'**78 **'**75 **'**76 '77 '74 173 '74 Year Year Walleye Freshwater drum 2.0-2.0y = -0.057x + 1.096y = 0.012x + 1.076r = -0.476r = 0.062Abundance Index Abundance Index Ο Ο 0 G 0 1.0-1.0-0 Θ Θ Θ 0. 0. '75 **'**77 **'**78 **'**73 '74 '75 **'**76 '78 '73 '74 '76 '77 Year Year

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 $(x_1, \dots, x_{n-1}, \dots, x_{n-1}$ 

Common and scientific names and methods of capture of fish in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978. (Sheet 1 Table 2.4-1 of 3)

daga manganan mengebakan mana sawa di kener kan wa mengeran kanan kanan kanan kanan kanan kanan kanan kanan kan	an a		Metho	d of Captur	re 1978			ىغىرى بىنىكى بىرىنى بالكر.	narafiti ilda yoo ahaa ilda ilda yoo aaddii 10		107-
Common Name	Scientific Name	Gill Net	Trap Net	Electro- fishing	Trawl	Seine	1973	1974	1975	1976	1977
Chestnut lamprey	Icthyomyzon castaneus		Х	Х				Х		Х	
Silver lamprey	Icthyomyzon unicuspis			Х				Х	Х	Х	Х
Lake sturgeon	Acipenser fulvescens									Х	Х
Longnose gar	Lepisost <b>eus</b> osseus	Х	Х				Х	Х	. Х	Х	Х
Shortnose gar	Lepisosteus platostomus	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Bowfin	Amia calva	Х	Х	Х	Х		Х	Х	Х	Х	Х
American eel	Anguilla rostrata		Х				Х	Х		Х	Х
Gizzard shad	Dorosoma cepedianum	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Goldeye	Hiodon alosoides	Х	Х				Х	Х	Х	Х	Х
Mooneye	Hiodon tergisus	Х	Х	Х			Х	Х	Х	Х	Х
Northern pike	Esox lucius	Х	Х	Х		Х	Х	Х	Х	Х	Х
Carp	Cyprinus carpio	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Brassy minnow	Hubonathus hawkinsoni							Х	Х		
Silvery minnow	Hybonathus nuchalis							Х			
Speckled chub	Hybopsis aestivalis									Х	
Silver shub	Hybopsis storeriana			Х		Х		Х	Х	X	Х
Golden shiner	Notemigonus crysoleucas							Х			X
Emerald shiner	Notropis atherinoides			Х		Х		Х	Х	Х	Х
River shiner	Notropis blennius					Х		Х	Х		Х
Common shiner	Notropis cornutus							Х	Х	Х	
Pugnose minnow	Notropis emiliae			Х		Х		Х	Х	Х	
Blacknose shiner	Notropis heterolepis							Х			
Spottail shiner	Notropis hudsonius			Х	Х	Х		Х	Х	Х	Х
Red shiner*	Notropis lutrensis								Х		
Rosyface shiner	Notropis rubellus							Х	Х		
Spotfin shiner	Notropis spilopterus			Х		Х		Х	Х	Х	Х
Redfin shiner	Notropis umbratilis								X	X	
Mimic shiner	Notropis volucellus							Х	X		
Bluntnose minnow	Pimephales notatus							Х	X		Х
Fathead minnow	Pimephales promelas							Х	• •		X
Bullhead minnow	Pimephales vigilar			Х		Х		X	Х	Х	X
Carpsucker species**	Carpoides species			Х		Х	Х	Х	Х	Х	Х

\*Red shiner probably misidentified breeding male spotfin shiner (1975). \*\*Prior to 1978 carpsuckers were identified to genus only.

Table 2.4-1

Common and scientific names and methods of capture of fish in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978. (Sheet 2 of 3)

Common Name	Scientific Name	Gill Net	<u>Methoo</u> Trap Net	<u>l of Captur</u> Electro- fishing	r <u>e 1978</u> Trawl	Seine	1973	1974	1975	1976	1977
River carpsucker	Carpoides carpio		Х	Х							
Quillback carpsucker	Carpoides cyprinus	X	Х	Х	Х	Х					
Hightin carpsucker	Carpoides velifer	Х									.,
White sucker	Catostomus commersoni		Х	Х		Х		Х	Х	Х	Х
Northern hogsucker	Hypentelium nigricans		Х								
Smallmouth buffalo	Ictiobus bubalus	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Bigmouth buffalo	Ictiobus cyprinellus	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Spotted sucker	Minytrema melanops		Х					Х		Х	
Silver redhorse	Moxostoma anisurum		Х	Х			Х	Х	Х	Х	Х
River redhorse	Moxostoma carinatum							Х			
Golden redhorse	Moxostoma erythrurum										Х
Shorthead redhorse	Moxostoma macrolepidotum	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Black bullhead	Ictal <b>urus</b> melas	Х	Х					Х	Х	Х	Х
Yellow bullhead	Ictalurus natalis	Х	Х		Х		Х	Х		Х	Х
Brown bullhead	Ictal <b>urus</b> nebulosus		Х				Х	Х	Х	Х	Х
Channel catfish	Ictalu <b>rus</b> punctatus	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
Tadpole madtom	Noturus gyrinus					Х			Х	Х	Х
Flathead catfish	Pylodictis olivaris	Х	Х	Х			Х	X	Х	Х	Х
Trout perch	Percopsis omiscomaycus							Х	Х	Х	X
Burbot	Lota lota							Х	Х	Х	Х
Brook silverside	Labidesthes sicculus										X
White bass	Morone chrusops	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
Rock bass	Ambloplites rupestris	X	X	X			X	X	x	X	X
Hybrid sunfish***	Lepomis X		X	X				X			X
Green sunfish	Lepomis cyanellus	Х		X			Х	X	Х	Х	X
Pumpkinseed	Lepomis gibbosus		Х				X	X	Х		2
Orangespotted sunfish	Lepomis humilis			Х							X
Bluegill	Lepomis macrochirus	Х	Х	X	Х	Х	Х	Х	Х	Х	X
Smallmouth bass	Micropterus dolomieui		Х	X		X	X	X	X	X	X
Largemouth bass	Micropterus salmoides	Х	Х	X			X	X		x	X
White crappie	Pomoxis annularis	X	X	X	Х	Х	X	X	х	X	X
Black crappie	Pomoxis nigromaculatue	X	X	X	X	X	X	x	x	x	x
Johnny darter	Etheostoma niarum			Х		X	••	X	X	X	X
Yellow perch	Perca flavescens	Х	Х	X		X	χ	X	X	X	Ŷ
Log perch	Percina caprodes			X		x	~	X	X	X	X

\*\*\*Most hybrid sunfish were likely Lepomis cyanellus X Lepomis macrochirus.

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Table 2.4-1 Common and scientific names and methods of capture of fish in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978. (Sheet 3 of 3)

			Metho	d of Captur	e 1978						
Common Name	Scientific Name	Gill Net	Trap Net	Electro- fishing	Trawl	Seine	1973	1974	1975	1976	1977
Sauger	Stizostedion canadense	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Walleye	Stizostedion vitreum vitreum	X	X	X	Х	Х	Х	Х	Х	Х	Х
Freshwater drum	Aplodinotus grunniens	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х

Table 2.4-2 Trap net and gill net stations used from 1975 through 1978 in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota.

da kan daga da panan gang na pang na p	<u>Trap_net</u>						t	Bengdiningiti in convenient inter <sub>tion</sub> consp
0-2 0-4 0-6 0-9	1-0 1-1 1-4 1-5 1-9	3-0 3-2 3-3 3-5 3-7	4-1 4-3 4-6 4-7		0-1 0-3 0-6 0-8	1-2 1-3 1-6 1-9	3-0 3-2 3-5 3-8	

Species	аналистично оторологи, на селото со с 	Above Plant	P1 p1 Lo	ant Area (from ant intake to ck and Dam 3	B	elow Lock and Dam 3
	No.	No./lift (for 33 lifts)	No.	No./lift (for 20 lifts)	No.	No./lift (for ll lifts)
Longnose gar Shortnose gar Bowfin American eel Gizzard shad Goldeye Mooneye Northern pike Carp River carpsucker	2 42 9 1 15 0 13 35 178 8	0.06 1.27 0.27 0.03 0.45 0 0.39 1.06 5.39 0.24	0 2 0 0 10 10 1 2 2 38 0	0 0.10 0 0.50 0.05 0.10 0.10 1.90 0	0 0 1 0 0 0 0 2 46 1	0 0.09 0 0 0 0 0.18 4.18 0.09
Quillback carpsucker White sucker Smallmouth buffalo Bigmouth buffalo Spotted sucker Silver redborse	13 2 0 7 1	0.39 0.06 0 0.21 0.03 0.33	1 0 1 4 0	0.05 0 0.05 0.20 0	0 2 0 3 0	0 0.18 0 0.27 0
Shorthead redhorse Black bullhead Yellow bullhead Brown bullhead Channel catfish Flathead catfish White bass Rock bass	80 1 1 3 1 200 4	2.42 0.03 0.03 0.03 0.09 0.03 6.06 0.12	19 2 0 1 1 39 0	$\begin{array}{c} 0.05 \\ 0.95 \\ 0.10 \\ 0 \\ 0 \\ 0.05 \\ 0.05 \\ 1.95 \\ 0 \end{array}$	8 3 0 0 2 23 0	0.73 0.27 0 0 0 0 0.18 2.09 0
Bluegill Largemouth bass White crappie Black crappie Yellow perch Sauger Walleye Freshwater drum	76 1 85 143 1 17 29 59	2.30 0.03 2.58 4.33 0.33 0.52 0.88 1.79	25 0 53 40 0 12 3 293	1.25 0 2.65 2.00 0 0.60 0.15 14.65	0 9 12 0 1 12 183	0 0.82 1.09 0 0.09 1.09 16.64
Total	1039	31.48	550	27.50	308	28.00

Summary of trap net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring 1978.

Table 2.4-3

Table 2.4-4

Summary of trap net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, summer 1978.

Species		Above Plant	P1 p1 Lo	ant Area (from ant intake to ck and Dam 3)	Below Lock and Dam 3		
	No.	No./lift (for 34 lifts)	No.	No./lift (for 20 lifts)	No.	No./lift (for 14 lifts)	
Chestnut lamprey Longnose gar Shortnose gar Bowfin American eel Gizzard shad Mooneye Northern pike Carp River carpsucker Quillback carpsucker White sucker Smallmouth buffalo Bigmouth buffalo Silver redhorse Shorthead redhorse Black bullhead Channel catfish Flathead catfish Flathead catfish White bass Rock bass Hybrid sunfish Pumpkinseed Bluegill Smallmouth bass Largemouth bass White crappie Black crappie Yellow perch Sauger Walleye	$ \begin{array}{c} 1\\ 1\\ 1\\ 2\\ 3\\ 17\\ 0\\ 14\\ 4\\ 38\\ 71\\ 2\\ 3\\ 0\\ 4\\ 9\\ 0\\ 60\\ 2\\ 1\\ 170\\ 2\\ 0\\ 27\\ 5\\ 0\\ 40\\ 226\\ 1\\ 7\\ 17 \end{array} $	$\begin{array}{c} 0.03\\ 0.32\\ 0.68\\ 0.50\\ 0\\ 0\\ 0.41\\ 0.12\\ 1.12\\ 2.09\\ 0.06\\ 0.09\\ 0\\ 0.09\\ 0\\ 0.12\\ 0.26\\ 0\\ 1.76\\ 0.06\\ 0\\ 0\\ 0\\ 1.76\\ 0.06\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	$\begin{array}{c} 0\\ 1\\ 2\\ 0\\ 0\\ 1\\ 0\\ 57\\ 1\\ 0\\ 2\\ 3\\ 3\\ 0\\ 15\\ 15\\ 0\\ 161\\ 0\\ 0\\ 57\\ 0\\ 1\\ 132\\ 0\\ 4\\ 4\end{array}$	$\begin{array}{c} 0\\ 0.05\\ 0.10\\ 0\\ 0\\ 0\\ 0.05\\ 0\\ 0\\ 2.85\\ 0.05\\ 0\\ 0\\ 0.15\\ 0.15\\ 0\\ 0\\ 0.15\\ 0.15\\ 0\\ 0\\ 0.75\\ 0\\ 0\\ 0\\ 0\\ 0\\ 2.85\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	$ \begin{array}{c} 1\\0\\2\\3\\1\\1\\1\\4\\56\\2\\1\\1\\56\\2\\1\\1\\2\\9\\3\\1\\1\\9\\4\\0\\2\\54\\109\\1\\2\\2\end{array} $	$\begin{array}{c} 0.07\\ 0\\ 0.14\\ 0.21\\ 0.07\\ 0.07\\ 0.07\\ 1.00\\ 4.00\\ 0.14\\ 0.07\\ 1.07\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.21\\ 0.50\\ 0\\ 0\\ 0.07\\ 2.07\\ 0.21\\ 0.07\\ 0.21\\ 0.07\\ 0.21\\ 0.07\\ 0.21\\ 0.07\\ 0.14\\ 3.86\\ 7.79\\ 0.07\\ 0.14\\ 0.14\\ 0.14\end{array}$	
Freshwater drum Total	69 825	2.03 24.26	127 657	6.35 32.85	67 474	4.79 33.86	

Species		Above Plant	P1 p1 Lo	ant Area (from ant intake to ck and Dam 3)	В	Below Lock and Dam 3		
	No.	No./lift (for 34 lifts)	No.	No./lift (for 20 lifts)	No.	No./lift (for 15 lifts)		
Longnose gar Shortnose gar Bowfin American eel Gizzard shad Goldeye Mooneye Northern pike Carp River carpsucker Quillback carpsucker White sucker Smallmouth buffalo Bigmouth buffalo Silver redhorse Shorthead redhorse Black bullhead Brown bullhead Channel catfish Flathead catfish Flathead catfish White bass Rock bass Hybrid sunfish Bluegill Smallmouth bass Largemouth bass	$\begin{array}{c} 2\\ 37\\ 13\\ 0\\ 8\\ 1\\ 43\\ 53\\ 2\\ 2\\ 2\\ 1\\ 1\\ 4\\ 5\\ 44\\ 1\\ 1\\ 2\\ 286\\ 0\\ 1\\ 52\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 1\\ 0\\ 0\\ 0\\ 1\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	$\begin{array}{c} 0.06\\ 1.09\\ 0.38\\ 0\\ 0.24\\ 0.03\\ 0.12\\ 1.26\\ 1.56\\ 0.06\\ 0.06\\ 0.06\\ 0.03\\ 0.03\\ 0.03\\ 0.12\\ 0.15\\ 1.29\\ 0.03\\ 0.03\\ 0.03\\ 0.03\\ 0.03\\ 0.03\\ 1.53\\ 0.03\\ 0\\ 0\end{array}$	$\begin{array}{c} 0 \\ 4 \\ 0 \\ 0 \\ 2 \\ 0 \\ 1 \\ 1 \\ 6 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 2 \\ 5 \\ 3 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$	$\begin{array}{c} 0\\ 0.20\\ 0\\ 0\\ 0\\ 0\\ 0.10\\ 0\\ 0.05\\ 0.05\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\$	0 0 5 2 0 0 1 5 73 0 2 1 2 3 0 14 0 0 0 111 1 0 0 0 2	$\begin{array}{c} 0\\ 0\\ 0\\ 0.33\\ 0.13\\ 0\\ 0\\ 0\\ 0.07\\ 0.33\\ 4.87\\ 0\\ 0\\ 0.13\\ 0.07\\ 0.13\\ 0.20\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0$		
Black crappie Sauger Walleye Freshwater drum	435 22 12 83	12.79 0.65 0.35 2.44	74 7 3 71	3.70 0.35 0.15 3.55	381 9 12 92	25.40 0.60 0.80 6.13		
Total	1174	34.53	532	26.60	763	50.87		

Summary of trap net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, fall 1978.

Table 2.4-5

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Table 2.4-6.	Length-frequencies of all fish caught in trap nets from the Mississippi River and
	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 1 of 15)

Total Length in Centimeters	Chestnut lamprey	Longnose gar	Longnose gar	Longnose gar	Longnose gar	Shortnose gar	Shortnose gar	Shortnose gar	Shortnose gar
	Summer*	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total
						2			
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9									
10.0 - 11.9					· · · · · · · · · · · · · · · · · · ·				
12.0 - 13.9									
14.0 - 15.9		ļ				ļ			
16.0 - 17.9						<u> </u>			
18.0 - 19.9									
20.0 - 21.9									
22.0 - 23.9			· · · · · · · · · · · · · · · · · · ·						
24.0 - 25.9	ļ					ļ		l	
26.0 - 27.9	ļ	<b> </b>			l	<b>_</b>			
28.0 - 29.9			· · · · · · · · · · · · · · · · · · ·					· .	
30.0 - 31.9				ļ					
32.0 - 33.9						ļ	ļ		
34.0 - 35.9				· · · · · · · · · · · · · · · · · · ·		ļ			
36.0 - 37.9						·			
38.0 - 39.9			ļ				<u> </u>		
		+	1	<u>.</u>	+	·	·	+	·
40.0 - 44.9	<b>_</b>	· · · · ·	ļ		<u> </u>				
45.0 - 49.9	ļ				<u> </u>	<u> </u>		<u> </u>	10
50.0 - 54.9						6	3	3	12
55.0 - 59.9	ļ				<u> </u>	19	13	16	48
60.0 - 64.9			<u> </u>			13	6	17	36
65.0 - 69.9	<u> </u>		3	1	4	5	3	3	-11
70.0 - 74.9			4		4	<u>                                      </u>			
75.0 - 79.9		1	3	1	5				
80.0 - 84.9		1	2		3		·		
85.0 - 89.9				<u> </u>		+	<u> </u>		
90.0 - 94.9									
95.0 - 99.9							· ·		
100.0 - +		+	+		<u> </u>				
		<u> </u>	<u> </u>	·	+	+	<u> </u>	+	
Others not meas.	2	+	<u> </u>	<u> </u>		· · · · · · · · · · · · · · · · · · ·	2	2	4
Iotal unmeasured	2	+	10	2	16		2	2	108
iotal measured		2	12	2	10	<u>  44</u>   лл	23	1 11	112
Grand Total	2	2	12	2	10	44		41	112
				<u> </u>		+	<u> </u>		
			+;				-	+	
<b> </b>		+						<u> </u>	
					+	+		+	+
	<u> </u>	1		Į		1	<u> </u>	L	1

\* This species was caught during only one season.

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 2 of 15)

Total Length in Centimeters	Bowfin	Bowfin	Bowfin	Bowfin	American eel	American eel	American eel	American eel	Gizzard shad
	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total	Spring
Y/Y not meas.									
····									
0.1 - 1.9	ļ								
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9	ļ								
8.0 - 9.9									
10.0 - 11.9	<u> </u>								
12.0 - 13.9									
14.0 - 15.9							+		
16.0 - 17.9				+			+		
18.0 - 19.9	<u> </u>								+
20.0 - 21.9									2
22.0 - 23.9									
26.0 - 27.9			-						
28.0 - 29.9									1
30.0 - 31.9									4
32 0 - 33.9	+			-					9
34.0 - 35.9	1		-						1
36.0 - 37.9									2
38.0 - 39.9		2		2		-			
			·····		····				
40.0 - 44.9		1	1	2					2
45.0 - 49.9		2		2					
50.0 - 54.9	2	3	3	8					
55.0 - 59.9	3	5	3	11					
60.0 - 64.9	4	2	7	13					
65.0 - 69.9	1		2	3					
70.0 - 74.9		3		4					
75.0 - 79.9		_							
80.0 - 84.9							1	1	
85.0 - 89.9	+								
90.0 - 94.9	+			_					+
<u>95.0 - 99.9</u>									
<u>+ 100.0 - +</u>	+								
	+	+							
Total upmoscured		2		3			<u> </u>	3	
Total massived	10	10	17					1	2/
Chand Tatal	1 10	20	10	40				1	25
Harana lotal	1			40				<u>+</u>	
	1			·				1	
<b></b>	1								
						E			

2 1-60

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 3 of 15)

Total Length	Gizzard shad	Gizzard shad	Gizzard shad	Goldeye	Goldeye	Goldeye	Mooneye	Mooneye	Mooneye
in Centimeters	Summer	Fall	Total	Spring	Fall	Tota]	Spring	Summer	Fall
					+				
Y/Y not meas.		<u> </u>					-   · · · · · · · · · · · · · · · · · ·	-	
0.1 - 1.9						· · · · · · · · · · · · · · · · · · ·			
0.1 - 1.9						+	-	+	
2.0 - 3.9	<u> </u>				+				
4.0 - 5.9			<u> </u>		<u>.</u>		-		
80 - 99									
10.0 - 11.9							-		
12.0 - 13.9			+		+	+			+
14.0 - 15.9		2	2	1					+
16.0 - 17.9	<u> </u>	4	4					-	1
18.0 - 19.9		1		1	1	1			
20.0 - 21.9	·	1	2	1	1		-	1	
22.0 - 23.9			1			1		1	
24.0 - 25.9	]		1						
26.0 - 27.9	3		3						1
28.0 - 29.9			1				1		
30.0 - 31.9	1		5				7	3	
32.0 - 33.9	2		11				7	2	3
34.0 - 35.9	3	2	9						2
36.0 - 37.9	1	The second s	3						
38.0 - 39.9		1	1						
	ļ	+	1				<del>_</del>		
40.0 - 44.9	· .	<u></u>	2	1	<u>   </u>	2			
45.0 - 49.9									
50.0 - 54.9									
55.0 - 59.9	<u> </u>								
60.0 - 64.9									
70.0 74.0				+	-			+	
70.0 - 74.9		+		-		-			
80.0 - 84.9			+						
85.0 - 89.9		1							
90.0 - 94.9		+			+			-	
95.0 - 99.9		1				-			
100.0 - +	1	1.	1	1					
	1		1			- <b>-</b>		-	
Others not meas.	5	1	7						
Total unmeasured	5	1	7						
Total measured	11	9	44	1	1	2	15	5	6
Grand Total	16	10	51	1	1	2	15	5	6
	ļ		· · · · · ·						
L									
L	ļ			· <b> </b>					
· · · · · · · · · · · · · · · · · · ·									
	ļ	·							

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 4 of 15)

Total Length in Centimeters	Mooneye	Northern pike	Northern pike	Northern pike	Northern pike	Carp	Carp	Carp	Carp
·	Total	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total
		ļ			L				
Y/Y not meas.									
						ļ			
0.1 - 1.9		<u> </u>	<u> </u>	ļ					
2.0 - 3.9				<b></b>	<u> </u>			_	
4.0 - 5.9			<u> </u>	<u> </u>	ļ	<u> </u>			
6.0 - 7.9		+			ļ				
8.0 - 9.9					+				
10.0 - 11.9		+					+		
14.0 15.9	<u> </u>	+	+		<u> </u>				
14.0 - 15.9				<u> </u>					
18.0 - 19.9		+			1	+	1		1
20.0 - 21.9	· · ·	+	1		1	1			
22.0 - 23.9	<b> </b>	+	1	+		+	2	1	3
24.0 - 25.9	1	1			1	1	<u> </u>		1
26.0 - 27.9	1						3	1	4
28.0 - 29.9	1					2	6	1	9
30.0 - 31.9	10					1	5	3	9
32.0 - 33.9	12					1	4	2	7
34.0 - 35.9	2						2	2	4
36.0 - 37.9						1	3	1	5
38.0 - 39.9						4	2		6
40.0 - 44.9	+	1	1	1	1	21	15	9	45
45.0 - 49.9	1	1 1	1	1	2	55	29	19	103
50.0 - 54.9	1	2	2		Δ	74	49	18	141
55.0 - 59.9			3	1	4	29	29	31	89
60.0 - 64.9		6		10	16	39	20	13	72
65.0 - 69.9		7	6	5	18	11	13	23	47
70.0 - 74.9		7	5	10	22	14	1	6	21
75.0 - 79.9		4	6	8	18	2			2
80.0 - 84.9		2	13	7	22				
85.0 - 89.9	ļ	2	8	5	15				
90.0 - 94.9	. <u> </u>	3	4		7				
95.0 - 99.9		4	+ 1	2	7				
100.0 - +	+	+	2		2				
			+	+		+			-
Uthers not meas.				+	<u></u>	6		2	<u> </u>
Total unmeasured	26	20		40	120	256	10/	120	570
Grand Total	20	39	52	49	140	262	184	130	578
	20		- <u>J</u>	+ + 3	170				
	1		1			+			
	1		1	(		1			
1	1				· ·		-		
9						and the second se			

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 5 of 15)

Total Length in Centimeters	River carp- sucker	River carp- sucker	River carp- sucker	River carp- sucker	Quillback carp- sucker	Quillback carp- sucker	Quillback carp- sucker	Quillback carp- sucker	White sucker
	Spring	Summer	Fall ·	Total	Spring	Summer	Fall	Total	Spring
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9									
10.0 - 11.9							-		
12.0 - 13.9									
14.0 - 15.9									
16.0 - 17.9									
18.0 - 19.9									
20.0 - 21.9					1			11	
22.0 - 23.9									
24.0 - 25.9								1	
26.0 - 27.9	1			]		L		·	
28.0 - 29.9									
30.0 - 31.9					3	1	1	5	11
32.0 - 33.9	1	· · · · · ·		1	3			3	
34.0 - 35.9					l	l1		22	1
36.0 - 37.9					2	1		3	1
38.0 - 39.9		2		2	11	11	11	3	1
40.0 - 44.9		1				1	1		
45.0 - 49.9	2	2	<u> </u>	4	<u> </u>	· · · · · · · · · · · · · · · · · · ·		1	
50.0 - 54.9	1	<u> </u>			1	<u> </u>	<b>_</b>		
55.0 - 59.9				I					
60.0 - 64.9	1			]					
65.0 - 69.9									
70.0 - 74.9									
75.0 - 79.9			·						
80.0 - 84.9									
85.0 - 89.9									
90.0 - 94.9									
95.0 - 99.9									
100.0 - +									
		ļ	ļ		ļ	· .	<b> </b>	l	
Others not meas.	1	1	ļ	2					
Total unmeasured	<u>                                      </u>	<u> </u>		2			<b> </b>		
Total measured	88	4	2	14	14	44	4	22	4
Grand Total	9	5	2	16	14	4	4	22	4
		<u>}</u>	· · · · · · · · · · · · · · · · · · ·		<u> </u>				
			<u> </u>			+			
		<u> </u>						+	
		<u> </u>				<u> </u>	<b> </b>	+	
	ļ		Į	ļ	1		Į	<b>.</b>	ļ

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 6 of 15)

Total Length in Centimeters	White sucker	White sucker	White sucker	Smallmouth buffalo	Smallmouth buffalo	Smallmouth buffalo	Smallmouth buffalo	Bigmouth buffalo	Bigmouth buffalo
	Summer	Fall	Total	Spring	Summer	Fall	Total	Spring	Summer
Y/Y not meas.									
				<u></u>					
0.1 - 1.9				ļ					
2.0 - 3.9						ļ			ļ
4.0 - 5.9				ļ					
6.0 - 7.9				<u> </u>		·			<b>_</b>
8.0 - 9.9									
10.0 - 11.9					<u>_</u>			· · · · · · · · · · · · · · · · · · ·	
12.0 - 13.9				+	<u> </u>			ļ	<u> </u>
14.0 - 15.9				<u> </u>					
10.0 - 17.9						<u>}</u>			<u> </u>
18.0 - 19.9	· · · ·			+	+	<u> </u>	<u> </u>		+
20.0 - 21.9				+	·····	<u>}</u>			
22.0 - 25.9					1		1	 	1
26.0 - 27.9				1	2		2	<u> </u>	1
28.0 - 29.9					1	1 1	2	2	
30.0 - 31.9	1		2		1	†	1	<u> </u>	1
32.0 - 33.9	······		<u>_</u>				<u> </u>		3
34.0 - 35.9		·····	1		1		1	2	1 1
36.0 - 37.9	1	1	3		1	· ·	1		
38.0 - 39.9	1		2			2	2		1
		4	•				·		
40.0 - 44.9	7	1	88			ļ	L		
45.0 - 49.9	7	1	8		2		2	L	1
50.0 - 54.9					ļ			2	2
55.0 - 59.9		<b></b>			<u> </u>			1	1
60.0 - 64.9	<u> </u>		<u> </u>	+			+	2	
65.0 - 69.9		<u>}</u>			+			+	
70.0 - 74.9	}	<u> </u>	+				<u> </u>	+	
75.0 - 79.9			<u> </u>		+	+	+	+	+
00.0 - 84.9		<u> </u>			+		+		
90.0 - 94.9	+	+		+		+	+		
95.0 - 99.9	<u> </u>	+	1	1	1		+		
100.0 - +	<u> </u>	1	1	<u> </u>	+	1	1	1	+
1		1	1 .	1	1		1	1	
Others not meas.	1	1	1						
Total unmeasured				1					
Total measured	17	3	24	1	8	3	12	14	12
Grand Total	17	3	24	1	8	3	12	14	12
		<b>_</b>		·					
L	<u> </u>	<u> </u>							
L		ļ		<u></u>					ļ
	ļ			<b></b>	-	l	4		_ <b>_</b>
	ļ	-		_					

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Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 7 of 15)

Total Length in Centimeters	Bigmouth buffalo	Bigmouth buffalo	Spotted <b>su</b> cker	Silver redhorse	Silver redhorse	Silver redhorse	Silver redhorse	Shorthead redhorse	Shorthead redhorse
	Fall	Total	Spring*	Spring	Summer	Fall	Total	Spring	Summer
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9								·	
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9									
10.0 - 11.9							-		
12.0 - 13.9							·		
14.0 - 15.9						· · · · · · · · · · · · · · · · · · ·			
16.0 - 17.9		1							
18.0 - 19.9									
20.0 - 21.9		1				ļ			
22.0 - 23.9		<u> </u>					ļ		
24.0 - 25.9		2	····			l	ļ		
26.0 - 27.9	·	<u>                                     </u>	<u> </u>	<u> </u>					
28.0 - 29.9		2						1	
30.0 - 31.9			· · · · · · · · · · · · · · · · · · ·					<u>                                     </u>	
32.0 - 33.9		4	ļ		ļ			3	3
34.0 - 35.9	2	5				· · · · · · · · · · · · · · · · · · ·		3	2
36.0 - 37.9					<b> </b>			10	10
38.0 - 39.9	1	2		ļ			L	22	15
40.0 - 44.9	1 1	<u> </u>	1 1	2	1 1	T	3	44	30
45.0 - 49.9		2		2	· · · · · · · · · · · · · · · · · · ·	1 1	2	18	12
50.0 - 54.9	2	6		5	2	1	8	3	1
55.0 - 59.9		2	1	1	<u> </u>	2	4		· · · ·
60.0 - 64.9		2		1			1		
65.0 - 69.9		1		1					
70.0 - 74.9									
75.0 - 79.9									
80.0 - 84.9									
85.0 - 89.9									
90.0 - 94.9									
95.0 - 99.9				ļ	<u> </u>				ļ
100.0 - +	L	· .		ļ	ļ			ļ	
				· · · · · · · · · · · · · · · · · · ·			ļ	ļ	ļ
Others not meas.			ļ	1			1.	4	
Total unmeasured		+	<u> </u>	1	<u> </u>		1		
Total measured	8	34	<u> </u>	<u>↓ 11</u>	3	5	19	107	82
Grand Total	8	34	1	12	3	5	20	107	82
		+							
	+		+÷.	ļ				+	+
<u> </u>	+		+				<u> </u>	<u> </u>	
	1	1	1	1	1		1	1	1

\* This species was caught during only one season.

Table 2.4-6.

6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 8 of 15)

Fall         Total         Spring         Sumer         Fall         Total         Spring         Fall           Y/Y not meas.                                                                                             <	Total Length in Centimeters	Shorthead redhorse	Shorthead redhorse	Black bullhead	Black bullhead	Black bullhead	Black bullhead	Yellow bullhead	Brown bullhead	Brown bullhead
\$/\$ not neas.       Image: state st		Fall	Total	Spring	Summer	Fall	Total	Spring*	Spring	Fall
Y/Y not meas.										
0.1 - 1.9	Y/Y not meas.									
0.1       1.9       1       1       1       1         2.0       - 3.9       1       1       1       1         6.0       - 7.9       1       1       1       1         10.0       -11.9       1       1       1       1         12.0       -13.9       2       2       2       1       1         16.0       -17.9       1       1       1       1       1         20.0       -21.9       2       2       2       1       1       1         21.0       -23.9       2       6       8       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1			-							
2.0       3.9	0.1 - 1.9									
4,0 $5,9$	2.0 - 3.9									
6.0 - 7.9	4.0 - 5.9									
8.0 - 9.9	6.0 - 7.9									
10.0       11.9	8.0 - 9.9			1						
12.0 - 13.9	10.0 - 11.9									
14.0 - 15.9	12.0 - 13.9									
16.0 - 17.9       2       2       2 $20.0 - 21.9$ 1       1       1       1 $22.0 - 23.9$ 2       6       8       1 $22.0 - 23.9$ 1       4       4       4 $24.0 - 25.9$ 1       2       1       4       4 $28.0 - 29.9$ 1       2       1       1       4 $30.0 - 31.9$ 2       3       1       1       2       1 $30.0 - 33.9$ 1       7       1       1 $36.0 - 37.9$ 4       24 $36.0 - 37.9$ 4       24 $36.0 - 37.9$ 4       24 $36.0 - 37.9$ 4       24 $50.0 - 59.9$	14.0 - 15.9									
18.0 - 19.9       2       2       2       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1	16.0 - 17.9	1								
20.0 - 21.9 $2$ $1$ $1$ $1$ $1$ $24.0 - 23.9$ $1$ $2$ $6$ $8$ $1$ $24.0 - 23.9$ $1$ $2$ $6$ $8$ $1$ $26.0 - 27.9$ $1$ $2$ $1$ $4$ $4$ $28.0 - 29.9$ $1$ $2$ $1$ $1$ $4$ $32.0 - 33.9$ $1$ $7$ $1$ $1$ $2$ $1$ $36.0 - 37.9$ $4$ $24$ $1$ $1$ $1$ $1$ $36.0 - 37.9$ $4$ $24$ $1$ $1$ $1$ $1$ $36.0 - 37.9$ $4$ $24$ $1$ $1$ $1$ $1$ $40.0 - 44.9$ $30$ $113$ $1$ $1$ $1$ $1$ $45.0 - 49.9$ $9$ $39$ $1$ $1$ $1$ $1$ $60.0 - 64.9$ $2$ $6$ $1$ $1$ $1$ $1$ $71.0 - 78.9$ $1$ $1$ $1$ $1$ $1$ $1$ $1$	18.0 - 19.9	[		1	2		2			
22.0 - 23.9 $2$ $6$ $8$ $1$ $ 24.0 - 25.9$ $1$ $2$ $1$ $1$ $4$ $4$ $4$ $26.0 - 27.9$ $1$ $2$ $1$ $1$ $4$ $4$ $4$ $28.0 - 29.9$ $1$ $2$ $2$ $2$ $2$ $2$ $2$ $30.0 - 31.9$ $2$ $3$ $1$ $1$ $4$ $4$ $1$ $1$ $1$ $32.0 - 33.9$ $1$ $7$ $1$ $1$ $2$ $1$ $1$ $36.0 - 37.9$ $4$ $24$ $1$ $1$ $1$ $1$ $1$ $38.0 - 39.9$ $11$ $48$ $113$ $1$ $1$ $1$ $1$ $40.0 - 44.9$ $30$ $113$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ <	20.0 - 21.9				1		1			
24.0 - 25.9       1 $2$ 1       1 $4$ $4$ $4$ $4$ $26.0 - 27.9$ 1 $2$ 1       1 $4$ $4$ $4$ $4$ $28.0 - 29.9$ 1 $2$ $2$ $2$ $2$ $2$ $1$ $30.0 - 33.9$ 1 $7$ $1$ $1$ $1$ $1$ $1$ $36.0 - 37.9$ $4$ $24$ $1$ $1$ $1$ $1$ $1$ $36.0 - 37.9$ $4$ $24$ $1$ $1$ $1$ $1$ $1$ $36.0 - 37.9$ $4$ $24$ $1$ $1$ $1$ $1$ $1$ $36.0 - 39.9$ $11$ $48$ $1$ $1$ $1$ $1$ $1$ $40.0 - 44.9$ $30$ $113$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$	22.0 - 23.9		<b></b>	2	6		8	1		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	24.0 - 25.9		1		4		<u></u> Δ	<b>i</b>		
28.0 - 29.9       1       2       2       1       1 $30.0 - 31.9$ 2       3       1       1       2       1 $32.0 - 33.9$ 1       7       1       1       1       1 $34.0 - 35.9$ 7       12       1       1       1       1 $36.0 - 37.9$ 4       24       1       1       1       1 $38.0 - 39.9$ 11       48       1       1       1       1 $40.0 - 44.9$ 30       113       1       1       1       1 $45.0 - 49.9$ 9       39       1       1       1       1 $50.0 - 54.9$ 2       6       1       1       1       1 $60.0 - 64.9$ 1       1       1       1       1       1 $65.0 - 69.9$ 1       1       1       1       1       1 $75.0 - 79.9$ 1       1       1       1       1       1 $80.0 - 84.9$ 1       1       1       1       1       1       1 $90.0 - 94.9$ 1       1	26.0 - 27.9		1	2	1	1	4			
30.0 - 31.9 $2$ $3$ $1$ $1$ $1$ $1$ $1$ $32.0 - 33.9$ $1$ $7$ $1$ $1$ $1$ $1$ $1$ $34.0 - 35.9$ $7$ $12$ $1$ $1$ $1$ $1$ $1$ $36.0 - 37.9$ $4$ $24$ $1$ $1$ $1$ $1$ $1$ $38.0 - 39.9$ $11$ $48$ $1$ $1$ $1$ $1$ $1$ $40.0 - 44.9$ $30$ $113$ $1$ $1$ $1$ $1$ $1$ $45.0 - 49.9$ $9$ $39$ $1$ $13$ $1$ $1$ $1$ $45.0 - 59.9$ $2$ $6$ $1$ $1$ $1$ $1$ $1$ $60.0 - 64.9$ $2$ $6$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$	28.0 - 29.9		1		2		2			
32.0 - 33.9       1       7       1       1       1       1 $34.0 - 35.9$ 7       12       1       1       1       1 $36.0 - 37.9$ 4       24       1       1       1       1 $36.0 - 37.9$ 4       24       1       1       1       1 $38.0 - 39.9$ 11       48       1       1       1       1 $40.0 - 44.9$ 30       113       1       1       1       1 $45.0 - 49.9$ 9       39       39       1       1       1 $55.0 - 59.9$ 2       6       1       1       1       1 $65.0 - 59.9$ 1       1       1       1       1       1 $65.0 - 59.9$ 1       1       1       1       1       1 $75.0 - 79.9$ 1       1       1       1       1       1       1 $80.0 - 84.9$ 1       1       1       1       1       1       1       1 $95.0 - 99.9$ 1       1       1       1       1       1       1       1 <td>30.0 - 31.9</td> <td>2</td> <td>3</td> <td>1</td> <td><u>_</u></td> <td>1,</td> <td>2</td> <td></td> <td>1</td> <td></td>	30.0 - 31.9	2	3	1	<u>_</u>	1,	2		1	
34.0       -33.9       7       12       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1	32.0 - 33.9	1	7	1		/	1		<u>}</u> ↓	
36.0 - 37.9 $4$ $24$ $24$ $38.0 - 39.9$ $11$ $48$ $ 40.0 - 44.9$ $30$ $113$ $  40.0 - 44.9$ $30$ $113$ $  45.0 - 49.9$ $9$ $39$ $  50.0 - 54.9$ $2$ $6$ $  55.0 - 59.9$ $    60.0 - 64.9$ $    65.0 - 69.9$ $    70.0 - 74.9$ $    75.0 - 79.9$ $    80.0 - 84.9$ $    90.0 - 94.9$ $    91.0 - 94.9$ $    93.0 - 99.9$ $    100.0 - +$ $     100.0 - +$ $-$	34.0 - 35.9	7	12	<u> </u>	1		1		<u> </u>	<u>├</u> ┣
38.0 - 39.9       11 $48$	36.0 - 37.9	1	21	+	<u> </u>					+
40.0       -44.9       30       113	38.0 - 39.9	4 11	40		<u> </u>		<u> </u>			<u> </u>
40.0 - 44.9       30       113			148	- <b> </b>	<b>I</b>	<b>↓</b>	4	<b>↓</b>		<u></u>
45.0       -49.9       9       39	40.0 - 44.9	30	113	1	1	1	1	1		1
50.0 - 54.9       2       6	45.0 - 49.9	0	20		1	1				†
55.0 - 59.9 $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$	50.0 - 54.9	2	6		1	1	1	1		1
60.0       - 64.9	55.0 - 59.9	1	1	1	1	1				
65.0 - 69.9	60.0 - 64.9	1	1		1	1			†	1
70.0       74.9       Image: constraint of the second seco	65.0 - 69.9			1	1			<u> </u>	1	1
75.0       - 79.9	70.0 - 74.9				1				1	1
80.0 - 84.9	75.0 - 79.9	1			1				1	1
85.0 - 89.9	80.0 - 84.9				1	1				
90.0 - 94.9	85.0 - 89.9	1							†	
95.0 - 99.9	90.0 - 94.9	1			1	1		1	1	1
100.0 - +	95.0 - 99.9	1	1	1		1	1	1	1	1
Others not meas.       2       2       1       1	100.0 - +	1		1	1	1	1	1	1	1
Others not meas.       2       2       1       1	[		1	1		1	1	1	1	1
Total unmeasured     2     2     1     1       Total measured     .66     255     6     16     2     24     1     1     1       Grand Total     68     257     6     17     2     25     1     1     1	Others not meas	2	2		1	1	1			
Total measured     .66     255     6     16     2     24     1     1     1       Grand Total     68     257     6     17     2     25     1     1     1	Total unmeasured	2	2		1	1	1	1	1	1
Grand Total     68     257     6     17     2     25     1     1     1	Total measured	. 66	255	6	16	2	2/	1	1	1
	Grand Total	68	257	6	17	2	25	1		1
		1	1	1	1.	1	1	1		1
			1				1	1		1
		1	1				1	1	1	1
		1	1		1					
						Ţ				

\* This species was caught during only one season.

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 9 of 15)

Total Length in Centimeters	Brown bullhead	Channel catfish	Channel catfish	Channel catfish	Channel catfish	Flathead catfish	Flathead catfish	Flathead C catfish	Flathead catfish
	Total	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total
Y/Y not meas.									
0.1 - 1.9						· · · ·			
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9							L		
8.0 - 9.9									
10.0 - 11.9	ļ			ļ			<b>_</b>		
12.0 - 13.9							-		
14.0 - 15.9			ļ			ļ		ļ	
16.0 - 17.9							Ļ		
18.0 - 19.9					ļ		ļ		
20.0 - 21.9		ļ							
22.0 - 23.9	ļ	ļ			ļ	ļ	<b> </b>		
24.0 - 25.9	<u> </u>	1	ļ		1				
26.0 - 27.9				· · · · ·					
28.0 - 29.9	<u> </u>		<u> </u>		ļ		<u> </u>	<b>.</b>	
30.0 - 31.9	1			· · · · · · · · · · · · · · · · · · ·					
32.0 - 33.9	1				<b> </b>			ļ	
34.0 - 35.9							ļ		
36.0 - 37.9				<u> </u>		1	ļ		
38.0 - 39.9		1	ļ		L	ļ	ļ	<u> </u>	L
40.0 - 44.9		1	1	1 1	1 1	T	1	1 1	1 1
45.0 - 49.9	1	2	1	2	Λ	+			· · ·
50.0 - 54.9		<u> </u>	1	- <u>-</u>		+			
55.0 - 59.9	1					2	1		2
60.0 - 64.9		1			1 ,	<u> </u>	<u> </u>	1	
65.0 - 69.9					1		1		1
70.0 - 74.9		1			1	1	1		
75.0 - 79.9	1						1		
80.0 - 84.9	1	1		1	Ĩ	1	Î		
85.0 - 89.9									
90.0 - 94.9									
95.0 - 99.9						1			1
100.0 - +									
Others not meas.			ļ			·		ļ	
Total unmeasured	ļ	ļ		<b>_</b>	ļ		<u> </u>		
Total measured	2	4	1	3	8	4	2	2	8
Grand Total	2	4	1	3	8	4	2	2	8
	+	<b> </b>			<u> </u>		<b>_</b>		
					<b> </b>	ļ			
	<u> </u>			-					
					<b> </b>		<b>_</b>		
	L							<u></u>	<u> </u>

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 10 of 15)

Total Length in Centimeters	White bass	White bass	White bass	White bass	Rock bass	Rock bass	Rock bass	Rock bass	Hybrid sunfish
	Spring	Summer	Fall	Tota]	Spring	Summer	Fall	Total	Summer
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9								•	
4.0 - 5.9									
6.0 - 7.9	L								
8.0 - 9.9			ļ						
10.0 - 11.9	<u> </u>								1
12.0 - 13.9		L	<u> </u>			<u> </u>			
14.0 - 15.9	2	]	1	4	3	3		6	
16.0 - 17.9	4	10	ļ1	15	<u> </u>	1		2	
18.0 - 19.9	3	55	19	77	<b> </b>	<u> </u>	<u>                                      </u>	2	
20.0 - 21.9	ļ <u>         5         </u>	39	59	103	<b> </b>	<u> </u>	ļ		
22.0 - 23.9	43	27	34	104					
24.0 - 25.9	54	76	93	223	<u> </u>		<u> </u>	<u> </u>	
20.0 - 27.9	22	52	89	163	<u> </u>		<u>}</u>	+	
20.0 - 29.9	<u> </u>	16	80	105	<u> </u>				
30.0 - 31.9	8	13	25	46	<u> </u>				
32.0 - 33.9	17	15	46	78			<u> </u>		
36.0 - 37.9	29	25	57				<b></b>		
38.0 - 39.9	29	20	57	106					
50.0 - 55.5	32	1 <u>&gt;</u>	1 15	1 52	Į	1	ļ	<b>↓</b>	L
40.0 - 44.9	5	3	6	114	1	1		1	<u>†</u>
45.0 - 49.9		×				1		1	
50.0 - 54.9						1			
55.0 - 59.9	1								
60.0 - 64.9									
65.0 - 69.9									
70.0 - 74.9									L
75.0 - 79.9									
80.0 - 84.9									
85.0 - 89.9							ļ		
90.0 - 94.9			ļ						
95.0 - 99.9		+			+				<u> </u>
100.0 - +		+		+		+	<u> </u>	+	+
	+		+	+		+			+
Uthers not meas.		3	$\frac{2}{2}$	5		+	·····	+	
Total unmeasured		<u> </u>		5	+	<u> </u>	<u>                                     </u>	10	+
LIOTAL measured	262	35/	582 E04	1205	<u>4</u> л	5		10	+
Igranu Iutal	202	300	204	11200	44	5	<u>↓</u>	10	<u> </u>
		1					+	-	+
			1		1	+	1	1	1
		1	1	1			1		

Table 2.4-6.	Length-frequencies of all fish caught in trap nets from the Mississippi River and
	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota,
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 11 of 15)

Total Length in Centimeters	Hybrid sunfish	Hybrid sunfish	Pumpkin- seed	Bluegill	Bluegill	Bluegill	Bluegill	Smallmouth bass	Smallmouth bass
	Fall	Total	Summer*	Spring	Summer	Fall	Total	Summer	Fall
Y/Y not meas.									
			·····						
0.1 - 1.9					ļ				
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9							04		
10.0 - 11.9		I	·····		19	4	76		
14.0 15.0			1	20	46 70	30	108		
14.0 - 15.9	2			27	43	43	117	<u> </u>	
18.0 - 19.9	l			16	18	22	56		
20.0 - 21.9				6	2	3	11	1 7	
22.0 - 23.9					<u> </u>	1 1	1	1	
24.0 - 25.9					1			1	
26.0 - 27.9								1	
28.0 - 29.9									
30.0 - 31.9									
32.0 - 33.9								1	
34.0 - 35.9									
36.0 - 37.9									
38.0 - 39.9				<b></b>	L	<u> </u>			
		<b>├</b>	1	t	<u> </u>		+	+	·
40.0 - 44.9			[ 	<u> </u>			<u></u>		1
45.0 - 49.9							<b> </b>	<u> </u>	ld
50.0 - 54.9				<u> </u>		+			
55.0 - 59.9								· · · · · · · · · · · · · · · · · · ·	
60.0 - 64.9									
70.0 - 74.9		+							
75.0 - 79.9				+					
80.0 - 84.9				+	†	+	<u>}</u>	<u> </u>	
85.0 - 89.9									
90.0 - 94.9		1		1	1				
95.0 - 99.9									
100.0 - +									
		·							
Others not meas.					1		1		
Total unmeasured				ļ	1		1		
Total measured	3	4	1	101	177	115	393	5	1
Grand Total	3	4	1	101	178	115	394	5	1
	·			<u> </u>	<u> </u>		<b>_</b>		
		ļ		ļ	+	<b>_</b>	<u> </u>		
			·	<u> </u>			+	+	
			<u> </u>	<u> </u>			<u> </u>	+	<u> </u>
<u></u>	Į	4	<b> </b>		+	- <b> </b>		+	

\* This species was caught during only one season.

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 12 of 15)

·····			·····		······		·	1	1
	Smallmouth	Largemouth	Largemouth	Largemouth	Largemouth	White	White	White	White
Total Length	bass	bass	bass	bass	bass	crannie	crannie	crannie	crannie
in Centimeters	5455	5435	5435	5433	5433	craphie	Crappie	Crappie	crappie
Total	Tot-1	Smith	C	E-13	T-+-3	C	<b></b>		<b>T</b> . 1 *
		spring	Summer	rall	IOTAI	spring	Summer		lotal
· · · /···	<b></b>	<u> </u>	<u> </u>		<b>├</b>		<b>]</b>	<b> </b>	+
Y/Y not meas.	<b>+</b> +	<u> </u>			├	ļ	<u> </u>		-
0 1 7 0	<u> </u>	<u> </u>	<b>├</b> ────┤	<u> </u>	├		<u> </u>	<u> </u>	+
0.1 - 1.9	+	<b> </b>	<u> </u>	<u> </u>	<u>├</u>		<u> </u>	<u> </u>	+
2.0 - 3.9	+			<u> </u>			<u> </u>	<del> </del>	+
4.0 - 5.9	+	<b></b>	<b> </b>	<u> </u>		<b> </b>	<b> </b>	<u> </u>	<del> </del>
6.0 - 7.9	+		<b>+</b>	<u> </u>	<u>├</u>		<u> </u>	<u> </u>	+
8.0 - 9.9	+	+	<b>+</b>	<u> </u>	<u> </u>	<u> </u>	┟	<u> </u>	
10.0 - 11.9	+	+	<u> </u>	<u> </u>	<u> </u> i		<u>+</u>	-	+
12.0 - 13.9	+	<u> </u>	<u> </u>	<b> </b>	<u> </u>	<u> </u>	+	<u>      <u> </u> </u>	2
14.0 - 15.9	+	+	<del> </del>	+	<u> </u>	1	15	1 <u>7</u> 1 41	57
10.0 - 1/.9	+	+		<u> </u>	<u> </u>		1 2		
10.0 - 19.9	+	+	+ ;	<u> </u>			8	18	48
20.0 - 21.9	$\frac{1}{1}$	+	<u> </u>	+	<u> </u>	54	44	22	120
22.0 - 23.9	+'	+	+	<u> </u>	<u> </u>	28	+ <u>58</u>   1r	1 20	153
26.0 - 27.9	1 1	1	1	†	t	10 11	15	10	2/
28.0 - 20.0	+	1 1	1 1	1	2	7	<u> </u>	10	11
30.0 - 21.0	+	+	+	1	<u> </u>	2	+	+ *	
32.0 32.0		+	+	+	+	2	<u>↓                                      </u>	+	3
34.0 25.0	+	<u>+</u>	+	<u>+</u>	+	<u>├</u>	+	· <del> </del>	4
36.0 - 37.0	+		+	<u>↓                                    </u>	<u> </u>	<u> </u>	+	+	+
38 0 - 20 0	+	+	+	+	+	+	+	+	+
50.0 - 59.9	+	- <b>I</b>	- <b>I</b>	4	+	Ļ	+	4	<u>_</u>
40.0 - 44 9	1 1	t		1	1	T	1	1	1
45.0 - 49.9	1	1	1	1	1	1	+	1,	+
50.0 - 54.9	1	1		1	1	1	1	1	1
55.0 - 59.9	1	1	1	1	1	1	1	1	1
60.0 - 64 9	1	1	1	1	1	1	1	1	1
65.0 - 69.9	1	1	1	1	1		1	1	1
70.0 - 74.9		L	1				L		
75.0 - 79.9	1	1	1						L
80.0 - 84.9							Ι		
85.0 - 89.9	· · · · ·		L	I					
90.0 - 94.9	1								
95.0 - 99.9									
100.0 - +									
Others not meas.						1	4	1	5
Total unmeasured			1	1		1	4	4	5
Total measured	6	1	3	2	6	146	161	200	507
Grand Total	6	1 1	3	2	6	147	165	200	512
						<u></u>			
L		ļ		ļ	<b>_</b>		4		-
ļ			4	·	4			4	
					<u> </u>	1			
Table 2.4-6.	Length-frequencies of all fish caught in trap nets from the Mississippi River and								
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	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota,								
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 13 of 15)								

Total Length in Centimeters	Black crappie	Black crappie	Black crappie	Black crappie	Yellow perch	Yellow perch	Yellow perch	Sauger	Sauger
	Spring	Summer	Fall	Total	Spring	Summer	Total	Spring	Summer
								1	
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9							_		
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9									
10.0 - 11.9	11		1	2		<u>_</u>			
12.0 - 13.9	3	74	48	125	ļ	ļ		ļ	
14.0 - 15.9		109	138		ļ	<u></u>			
16.0 - 17.9	15	27	53	95	ļ				
18.0 - 19.9	72	40	38	150		ļ			
20.0 - 21.9	33	81	162	276					
22.0 - 23.9	41	91	282	414	<u>                                     </u>	ļ1	2	· · · · · · · · · · · · · · · · · · ·	
24.0 - 25.9	20	36	118	174	<u> </u>	1	<u> </u>		
26.0 - 27.9	77	5	33	45				1	
28.0 - 29.9	1	2	4	77	<b> </b>	<u> </u>			2
30.0 - 31.9			2	2				2	
32.0 - 33.9			<b> </b> ]					<u> </u>	ļ
34.0 - 35.9		<u> </u>		<b>├</b> ── <b>३</b> ───		<u> </u>		5	3
36.0 - 37.9					<u> </u>	<u> </u>		5	3
38.0 - 39.9		<u></u>	L	ļ	· · · · · · · · · · · · · · · · · · ·	ļ	L	4	2
40.0 - 44.9	<u></u>	t	1	<u> </u>	1		1		t
45.0 - 49.9	<u> </u>							6	
50.0 - 54.9				<u> </u>		1		3	2
55.0 - 59.9									
60.0 - 64.9		<u> </u>						<u> </u>	
65.0 - 69.9						1			
70.0 - 74.9			······	1		<u> </u>			
75.0 - 79.9									
80.0 - 84.9		1	1		1				
85.0 - 89.9		1				1		1	
90.0 - 94.9								1	
95.0 - 99.9									
100.0 - +									
Others not meas.	1	2	10	13				L	
Total unmeasured	1	2	10	13					
Total measured	194	465	880	1539	<u> </u>	2	3	30	13
Grand Total	195	467	890	1552	1	2	3	30	13
		<u> </u>				+	ļ		
			<u> </u>	ļ	<b>_</b>		ļ	ļ	
<b> </b>		<u> </u>	ļ	<u> </u>	<u> </u>		<b> </b>	<u> </u>	
<u> </u>				<u> </u> ,			<u> </u>	<b> </b>	<b> </b>
	<u> </u>	<u></u>	<u> </u>	L		<u></u>	<u> </u>	L	<u> </u>

Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 14 of 15)

Total Length in Centimeters	Sauger	Sauger	Walleye	Walleye	Walleye	Walleye	Fresh- water drum	Fresh- water drum	Fresh- water drum
	Fall	Total	Spring	Summer	Fall	Total	Spring	Summer	Fall
Y/Y not meas.					· · · · · · · · · · · · · · · · · · ·			-	
01 - 19		<b> </b>		+					
2 0 - 3,9			· · ·		<u> </u>		+	<u>├</u>	
4.0 - 5.9			+	1		<u> </u>	1		
6.0 - 7.9									
8.0 - 9.9									
10.0 - 11.9							ļ		
12.0 - 13.9	<b>_</b>								
14.0 - 15.9		<u> </u>					2	1	12
18.0 - 17.9				+	+	<u> </u>	12	24	26
20.0 - 21.9	· · ·	1		1		+	<u> </u>	22	24
22.0 - 23.9	1	1 1		1		1	63	27	19
24.0 - 25.9						<u> </u>	35	24	23
26.0 - 27.9	1	2					64	32	22
28.0 - 29.9	2	4	1			1	98	34	38
30.0 - 31.9	2	4	+				101	32	33
32.0 - 33.9	5	7	3		<u> </u>	4	46	17	23
34.0 - 35.9	7	15	<u> </u>	<u> </u>	3	5	24	8	
38.0 - 39.9	7	13	1	1	3	5	6	/ /	1
30.0 - 37.7	1	13	<i>k</i>	_ <u>_</u>	J3	<u> </u>	1	+	- <b>I</b>
40.0 - 44.9	6	12	4		4	8	5	2	
45.0 - 49.9	5	10	5	2	4	11	1		
50.0 - 54.9		3	4	6	5	15	1		
55.0 - 59.9			<u>  11</u>	77	<u> </u>	18		1	
60.0 - 64.9			77	4	4	15		<u> </u>	
<u> </u>	+		$\frac{2}{1}$	- <u> </u>	3	6			
70.0 - 74.9							+		+
80.0 - 84.9	1	+	-			+	+	+	
85.0 - 89.9		1			1	1	1	1	1
90.0 - 94.9								1	
95.0 - 99.9									
100.0 - +		+				+			
							+		
Others not meas.			1	1 1	+	2	2	2	3
	4		1		07	2	<u> </u>	2	3
Liotal measured	38		43	22	27	92	535	263	243
urang lotal		- <u>1</u> 81				1	1		+
		1			1	1	1	1	1
				•					

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2.4-72

	Freshwate								
Total Length	drum								
in Centimeters						-			
	Total								
	10 041								
Y/Y not meas.				·					
0.1 - 1.9									
20 - 39									
4.0 - 5.9	<u> </u>	· · · · · · · · · · · · · · · · · · ·	<b> </b>						
6.0 - 7.9						ļ			
8.0 - 9.9									
10.0 - 11.9			<b>†</b>						
12.0 - 13.9			· ·						
14.0 - 15.9	4								
16.0 - 17.9	48								
18.0 - 19.9	75								2
20.0 - 21.9	95								
22.0 - 23.9	109								
24.0 - 25.9	82		L						
26.0 - 27.9	118		ļ						,
28.0 - 29.9	170								
30.0 - 31.9	166	ļ	ļ						
32.0 - 33.9	86	<u> </u>							
34.0 - 35.9	43	ļ							
36.0 - 37.9	24								
38.0 - 39.9	7					L			
40.0 - 44.9	7	<u>†                                    </u>	1	1	t	r		1	
40.0 - 44.9	1			<u> </u>		<u> </u>			
50.0 - 54.9	<u>                                      </u>	<u>†</u>	+						
55.0 - 59.9	1 1	1					· ···········		
60.0 - 64.9	1		1	1	1	1			
65.0 - 69.9	1			1				<u> </u>	
70.0 - 74.9									
75.0 - 79.9									
80.0 - 84.9									
85.0 - 89.9	ļ			ļ					
90.0 - 94.9	<b>_</b>	ļ	L	ļ					
95.0 - 99.9		ļ			ļ				
100.0 - +	<u> </u>	ļ			<u> </u>	ļ			
						ļ			
Others not meas.	/				<b> </b>		· · · · · · · · · · · · · · · · · · ·		
Total unmeasured	7	+		+	<u> </u>			<u> </u>	
LIOTAL measured	1037	<u> </u>	+	+	<u> </u>	<u> </u>			
usrand Total	1044		+	+		+			
	+	1	+	+		+	<u> </u>	+	
<u></u>	<u> </u>		÷	<u> </u>	+	+			
	<u> </u>	+	1	<u> </u>				+	
h	t	1	+	+ · · · · · · · · · · · · · · · · · · ·	+		<u> </u>	<u> </u>	<b>}</b>

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## Table 2.4-6. Length-frequencies of all fish caught in trap nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 15 of 15)

2.4-73

Table 2.4-7

Summary of gill net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring and fall 1978. (Sheet 1 of 2)

Species	CLUMPS to State state state and a state state of the	Sp	ring	and the state of the		Fa	11	والتوجيع المدروف والمعالم
i Na sana sa	Above Plant		Plant	Area	Above P	lant	Plant	Area
	No./li No. for 1	ft 6 lifts	No./ No. for 8	lift 3 lifts	No./li No. for 1	ft 6 lifts	No./ No. for 8	lift 3 lifts
Longnose gar	17	1.06	0	0	0	0	0	0
Shortnose gar	84	5.25	11	1.38	0	0	0	0
Bowfin	10	0.63	0	0	7	0.44	0	0
Gizzard shad	241	15.06	101	12.63	185	11.56	322	40.25
Goldeye	4	0.25	0	0	3	0.19	0	0
Mooneye	20	1.25	0	0	2	0.13	0	0
Northern pike	7	0.44	2	0.25	15	0.94	2	0.25
Carp	104	6.50	27	3.38	13	0.81	4	0.50
Quillback carpsucker	10	0.63	2	0.25	0	0	0	0
Highfin carpsucker	2	0.13	0	0	0	0	0	0
Smallmouth buffalo	14	0.88	4	0.50	0	0	7	0.88
Bigmouth buffalo	28	1.75	16	2.00	0	0	0	0
Shorthead redhorse	80	5.00	48	6.00	10	0.63	6	0.75
Black bullhead	14	0.88	12	1.50	4	0.25	9	1.13
Yellow bullhead	0	0	1	0.13	0	0	0	0
Channel catfish	17	1.06	5	0.63	15	0.94	5	0.63
Flathead catfish	0	0	1	0.13	0	0	0	0
White bass	235	14.69	50	6.25	37	2.31	19	2.38
Rock bass	6	0.38	0	0	4	0.25	. 0	0
Green sunfish	0	0	1	0.13	0	0	1	0.13
Bluegill	3	0.19	3	0.38	2	0.13	1	0.13
Largemouth bass	0	0	1	0.13	0	0	Ō	0
White crappie	43	2.69	47	5.88	8	0.50	15	1.88
Black crappie	68	4.25	14	1.75	17	1.06	· _ 2	0.25

2.4-74

Table 2.4-7

Summary of gill net catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring and fall 1978. (Sheet 2 of 2)

Species	and approximation management and specify add good	Sp	ring	Fall				
	<u>Above</u>	<u>Plant</u>	<u>Plant</u>	<u>Area</u>	<u>Above</u>	<u>Plant</u>	<u>Plant</u>	t Area
	No./1	ift	No./	lift	No./	lift	No.,	/lift
	No. for 1	6 lifts	No. for 8	3 lifts	No. for	16 lifts	No. for 8	3 lifts
Yellow perch	8	0.50	19	2.38	3	0.19	7	0.88
Sauger	62	3.88	43	5.38	72	4.50	32	4.00
Walleye	19	1.19	7	0.88	8	0.50	3	0.38
Freshwater drum	80	5.00	35	4.38	14	0.88	25	3.13
Total	1176	73.50	450	56.25	419	26.19	460	57.50

Table 2.4-8. Length-frequencies of all fish caught in gill nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, and 3 combined, seasons separated. (Sheet 1 of 8)

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Spring*         Spring*         Spring         Fall         Total         Total         Spring         Fall         Total         Spring         Fall         Total         Spring         Fall         Total         Spring         Fall         Total         Spring	Total Length in Centimeters	Longnose gar	Shortnose gar	Bowfin	Bowfin	Bowfin	Gizzard shad	Gizzard shad	Gizzard shad	Goldeye
Y/Y not meas.         2         2         262         262         262           0.1         1.9         1         1         1         1         1           2.0         3.9         1         1         1         1         1           4.0         5.9         1         1         1         1         1           6.0         7.9         1         1         1         1         1           10.0         11.9         1         1         1         1         1           14.0         15.9         1         1         1         1         1           18.0         19.9         1         1         1         2         1           24.0         25.9         1         1         1         2         2           24.0         25.9         1         1         1         2         2           26.0         27.9         1         1         1         2         2           26.0         27.9         1         1         1         1         2         2           26.0         27.9         1         1         1         1         2 </td <td></td> <td>Spring*</td> <td>Spring*</td> <td>Spring</td> <td>Fall</td> <td>Total</td> <td>Spring</td> <td>Fall</td> <td>Total</td> <td>Spring</td>		Spring*	Spring*	Spring	Fall	Total	Spring	Fall	Total	Spring
Y/Y not ness.       262       262       262         0.1       1.9       1       1       1       1         2.0       3.9       1       1       1       1       1         2.0       3.9       1       1       1       1       1       1         6.0       7.9       1       1       1       1       1       1         10.0       1.9       1       1       1       1       1       1         12.0       13.9       1       1       1       1       1       1         12.0       13.9       1       1       1       1       1       1       1         12.0       13.9       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td>									-	
0.1       1.9       1       1       1       1         2.0       3.9       1       1       1       1         4.0       5.9       1       1       1       1         8.0       9.9       1       1       1       1         12.0       13.9       1       1       1       1         12.0       13.9       1       1       1       1         16.0       17.9       1       1       1       1         16.0       19.9       1       10.2       12       2         22.0       23.9       1       2       12       2         24.0       25.9       1       1       2       2         24.0       25.9       1       1       2       2         24.0       25.9       1       1       1       2       2         24.0       25.9       1       1       1       1       2       2         24.0       25.9       1       1       1       1       1       1       1         32.0       33.9       1       1       1       1       1       1	Y/Y not meas.		ļ					262	262	
0.1       1.9       1       1       1       1         4.0       5.9       1       1       1       1         6.0       7.9       1       1       1       1         10.0       11.9       1       1       1       1         12.0       13.9       1       1       1       1         14.0       15.9       1       17       60       77         16.0       17.9       1       1       2       12         20.0       21.9       1       1       2       2         24.0       23.9       1       1       2       2         24.0       23.9       1       1       2       2         24.0       23.9       1       1       2       2         26.0       27.9       1       1       2       3       5         28.0       33.9       1       1       145       34.0       3         30.0       31.9       1       1       18       3       145         34.0       35.9       1       1       1       14       145       3         36.0	- 1 1 0		<u> </u>		ļ	ļ				
2.0 - 3.9	0.1 - 1.9		<u> </u>	ļ	+		1			
4.0 - 5.9       1       1       1 $8.0 - 9.9$ 1       1       1 $10.0 - 11.9$ 1       1       1 $11.20 - 13.9$ 1       1       1 $11.20 - 13.9$ 1       1       1 $11.20 - 13.9$ 1       17       160       77 $16.0 - 17.9$ 1       10       2       12 $20.0 - 21.9$ 1       10       2       12 $24.0 - 25.9$ 1       1       1       2 $24.0 - 25.9$ 1       1       1       2 $24.0 - 25.9$ 1       1       1       2 $26.0 - 27.9$ 1       2       3       5 $30.0 - 31.9$ 1       1       1       1       1 $36.0 - 37.9$ 1       1       1       1       1       1 $36.0 - 37.9$ 1       1       1       1       6       29       35 $36.0 - 37.9$ 1       1       1       1       1       1       1 $50.0 - 54.9$ 1       1       1       1	2.0 - 3.9									
0.0 - 7.9       1       1       1 $10.0 - 11.9$ 1       1       1 $12.0 - 13.9$ 2       17       19 $14.0 - 15.9$ 2       17       19 $16.0 - 17.9$ 10       2       17 $16.0 - 17.9$ 10       2       12 $20.0 - 21.9$ 10       2       12 $22.0 - 23.9$ 11       1       2 $26.0 - 27.9$ 2       3       5 $26.0 - 27.9$ 2       3       5 $28.0 - 29.9$ 1       1       14       31 $20.0 - 33.9$ 1       11       14       31 $21.0 - 33.9$ 1       1       14       31 $21.0 - 33.9$ 1       1       14       31 $31.9$ 1       1       1       145 $34.0 - 35.9$ 1       1       1       14 $36.0 - 37.9$ 1       1       1       1 $36.0 - 54.9$ 7       3       1       4       1 $50.0 - 54.9$ 7       3       1<	4.0 - 5.9	ļ								
0.0 - 11.9       1       1       1       1 $12.0 - 13.9$ 2       17       19 $14.0 - 15.9$ 2       17       19 $16.0 - 17.9$ 16       9       25 $20.0 - 21.9$ 10       2       12 $22.0 - 23.9$ 10       2       12 $22.0 - 23.9$ 2       2       2 $24.0 - 25.9$ 1       1       1 $22.0 - 23.9$ 2       2       2 $24.0 - 25.9$ 1       1       1 $26.0 - 27.9$ 2       3       5 $28.0 - 29.9$ 1       11       1       2 $30.0 - 31.9$ 1       1       145 $34.0 - 35.9$ 1       1       16       29 $36.0 - 37.9$ 1       1       16       29 $40.0 - 44.9$ 2       1       1       16       29 $40.0 - 54.9$ 7       3       1       4       1       145 $50.0 - 54.9$ 7       3       1       4       1       1 $50.0 -$	8.0 - 9.9				<u> </u>			<u> </u>	1	<u> </u>
12.0       - 13.9       7       7       7         14.0       - 15.9       -       -       2       17       19         16.0       - 17.9       -       -       16       9       25         20.0       - 21.9       -       -       16       9       25         20.0       - 23.9       -       -       10       2       12         24.0       - 25.9       -       -       1       1       2       -         26.0       - 27.9       -       2       3       5       -       -       -       -       -       -       -       -       -       2       3       5       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -	10.0 - 11.9						1		1	
14.0 - 15.9       1       1       17       19 $16.0 - 17.9$ 10       17       60       77 $18.0 - 19.9$ 10       2       12 $22.0 - 23.9$ 10       2       12 $22.0 - 23.9$ 2       2       2 $24.0 - 25.9$ 1       1       2       3 $26.0 - 27.9$ 2       3       5       3 $28.0 - 29.9$ 1       1       1       2 $33.3$ 6       3       3       6 $32.0 - 33.9$ 1       1       17       78       26 $34.0 - 35.9$ 1       1       1       78       26       104 $36.0 - 37.9$ 1       1       6       29       35       38 $38.0 - 39.9$ 1       1       1       78       26       104 $56.0 - 54.9$ 7       3       1       4       1       1 $50.0 - 54.9$ 7       3       1       4       1       1 $50.0 - 54.9$ 1       27       2       1       3       1	12.0 - 13.9				1	<u> </u>		7	7	1
16.0 - 17.9       17 $60$ 77 $18.0 - 19.9$ 16       9 $25$ $20.0 - 21.9$ 10       2 $12$ $22.0 - 23.9$ 2       2       2 $24.0 - 25.9$ 1       1 $12$ 2 $26.0 - 27.9$ 2 $3$ $5$ 2 $26.0 - 27.9$ 2 $3$ $5$ $2$ $22.0 - 33.9$ $23$ $3$ $6$ $3$ $30.0 - 31.9$ $1$ $188$ $31$ $89$ $34.0 - 35.9$ $1$ $178$ $26$ $104$ $36.0 - 37.9$ $1$ $1$ $78$ $26$ $104$ $36.0 - 37.9$ $1$ $1$ $1$ $3$ $14$ $3$ $40.0 - 44.9$ $2$ $1$ $1$ $3$ $5$ $8$ $3$ $50.0 - 54.9$ $7$ $3$ $1$ $4$ $  60.0 - 64.9$ $34$ $2$ $1$ $3$ $  65.0 - 69.9$ $18$ <	14.0 - 15.9		1		-		2	17	19	1
18.0 - 19.9       1       16       9       25         20.0 - 21.9       10       2       12         22.0 - 23.9       2       2       2         24.0 - 25.9       1       1       2       2         26.0 - 27.9       2       3       5       3         28.0 - 29.9       3       3       6       3         30.0 - 31.9       1       1       14       31       145         34.0 - 35.9       1       1       16       29       35         38.0 - 39.9       1       1       16       29       35         38.0 - 39.9       1       1       1       6       29       35         38.0 - 39.9       1       1       1       3       17       20         40.0 - 44.9       2       1       1       3       17       20         40.0 - 44.9       2       1       1       3       17       20       1         40.0 - 54.9       7       3       1       4       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1	16.0 - 17.9						17	60	77	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	18.0 - 19.9						16	9	25	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	20.0 - 21.9						10	2	12	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	22.0 - 23.9						2		2	
26.0 - 27.9       2       3       5 $28.0 - 29.9$ 3       3       6 $30.0 - 31.9$ 1       58       31       89 $32.0 - 33.9$ 1       1       78       26       104 $34.0 - 35.9$ 1       1       78       26       104 $36.0 - 37.9$ 1       1       6       29       35 $38.0 - 39.9$ 1       1       1       6       29       35 $40.0 - 44.9$ 2       1       1       3       5       8       3 $45.0 - 49.9$ 1       1       1       3       5       8       3 $50.0 - 54.9$ 7       3       1       4       -       -       - $65.0 - 69.9$ 1       27       2       1       3       -       -       - $70.0 - 74.9$ 5       3       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -	24.0 - 25.9			<u> </u>			1	1	2	
28.0 - 29.9       3       3       6 $30.0 - 31.9$ 58       31       89 $32.0 - 35.9$ 1       114       31       145 $34.0 - 35.9$ 1       1       78       26       104 $36.0 - 37.9$ 1       1       1       6       29       35 $38.0 - 39.9$ 1       1       1       6       29       35 $40.0 - 44.9$ 2       1       1       3       5       8       3 $45.0 - 49.9$ 7       3       1       4       -       -       - $40.0 - 44.9$ 2       1       3       5       8       3 $45.0 - 49.9$ 7       3       1       4       -       - $50.0 - 54.9$ 7       3       1       4       -       - $60.0 - 64.9$ 1       34       2       1       3       -       - $75.0 - 79.9$ 3       2       -       -       -       -       - $80.0 - 84.9$ 4       1       -       -       -       -       -	26.0 - 27.9		<u> </u>				2	3	5	<u> </u>
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	28.0 - 29.9						3	3	6	ļ
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	30.0 - 31.9			<u> </u>			58	31	89	<u></u>
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	32.0 - 33.9	<b> </b>					114	31	145	ļ
36.0 - 37.9       1       1       1       6       29       35 $38.0 - 39.9$ 1       1       3       17       20 $40.0 - 44.9$ 2       1       1       3       5       8       3 $45.0 - 49.9$ 1       1       1       3       5       8       3 $45.0 - 49.9$ 7       3       1       4       -       -       - $50.0 - 54.9$ 7       3       1       4       -       -       - $60.0 - 64.9$ 1       34       2       1       3       -       -       - $65.0 - 69.9$ 1       18       1       1       2       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -	.34.0 - 35.9		+	<u>  1</u>		1	78	26	104	
38, 0 $-39, 9$ $1$ $1$ $1$ $3$ $17$ $20$ $40, 0$ $-44, 9$ $2$ $1$ $1$ $3$ $5$ $8$ $3$ $45, 0$ $-99, 9$ $1$ $1$ $1$ $1$ $3$ $5$ $8$ $3$ $50, 0$ $54, 9$ $7$ $3$ $1$ $4$ $  55, 0$ $-59, 9$ $1$ $27$ $2$ $1$ $3$ $  60, 0$ $-64, 9$ $1$ $34$ $2$ $1$ $3$ $  60, 0$ $-64, 9$ $1$ $34$ $2$ $1$ $3$ $  60, 0$ $-64, 9$ $1$ $34$ $2$ $1$ $3$ $                         -$ <th< td=""><td>36.0 - 37.9</td><td><b>_</b></td><td></td><td></td><td><u>                                      </u></td><td>-<u> </u></td><td>6</td><td>29</td><td>35</td><td></td></th<>	36.0 - 37.9	<b>_</b>			<u>                                      </u>	- <u> </u>	6	29	35	
40.0 - 44.9       2       1       1       3       5       8       3 $55.0 - 59.9$ 7       3       1       4 $55.0 - 59.9$ 1       27       2       1       3 $60.0 - 64.9$ 1       34       2       1       3 $65.0 - 69.9$ 1       18       1       1       2 <td>38.0 - 39.9</td> <td></td> <td></td> <td>1 1</td> <td></td> <td>1 1</td> <td>3</td> <td>17</td> <td>20</td> <td></td>	38.0 - 39.9			1 1		1 1	3	17	20	
45.0 $49.9$ $1$ $1$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$ $3$	40.0 - 44.9	<u> </u>	1,2	1	1 1	1 1	2	E	0	1 2
50.0 - 54.9       7       3       1       4 $55.0 - 59.9$ 1       27       2       1       3 $60.0 - 64.9$ 1       34       2       1       3 $65.0 - 69.9$ 1       18       1       1       2 $70.0 - 74.9$ 5       3 $75.0 - 79.9$ 3       2 $80.0 - 84.9$ 4       1 $90.0 - 94.9$ $95.0 - 99.9$ $100.0 - + 2$ 1 $100.0 - + 2$ 1 $100.0 - + 2$ 1	45.0 - 49.9		+		1	<u>                                       </u>				
55.0 - 59.9       1 $27$ 2       1       3	50.0 - 54.9		7	3	1	1	1	1	1	1
60.0 - 64.9       1 $34$ 2       1 $3$	55.0 - 59.9	1	27	2	1	3	1			
65.0 - 69.9       1       18       1       1       2	60.0 - 64.9	1	34	2	1	3				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	65.0 - 69.9	1	18	1	1	2				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	70.0 - 74.9	5	3							· · · · · ·
80.0 - 84.9       4       1	75.0 - 79.9	3	2							
85.0 - 89.9	80.0 - 84.9	4	1							
90.0 - 94.9	85.0 - 89.9	<u> </u>		<u> </u>	+					
95.0 - 99.9       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1 <td< td=""><td>90.0 - 94.9</td><td><b> </b></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	90.0 - 94.9	<b> </b>								
100.0 - +       2       1       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -	95.0 - 99.9		-	+	+					
Others not meas.       27       2       29       1         Total unmeasured       27       264       291       1         Total measured       17       95       10       7       17       315       243       558       3         Grand Total       17       95       10       7       17       342       507       849       4	1 100.0 - +	2	+		· · ·			+		+
Others not measured       27       2       29       1         Total unmeasured       27       264       291       1         Total measured       17       95       10       7       17       315       243       558       3         Grand Total       17       95       10       7       17       342       507       849       4	Othone not more	+		+	+	+			00	+
Total measured       17       95       10       7       17       315       243       558       3         Grand Total       17       95       10       7       17       342       507       849       4	Total upmaanurad			+		+	27	264	201	1 1
Grand Total     17     313     243     556     3       Grand Total     17     95     10     7     17     342     507     849     4	Total measured	17	95	10	7	17	315	2/2	559	
	Grand Total	17	95	10	7	17	342	507	849	4
					· · · ·	1				<u> </u>
								1		
		-								

Table 2.4-8.	Length-free	quencies	of al	1 fis	h caug	ht in	gill r	nets	from	the	Mississ <sup>.</sup>	ippi F	≷iver	and	
	connecting	waters	near t	che Pra	airie	Island	d <sup>™</sup> Nucle	ear G	Genera	ting	Plant,	Red V	ling,		
	Minnesota,	1978.	Sectio	ons O,	1, ar	nd 3 co	ombinec	d, se	easons	sep	arated.	(She	eet 2	of 8	3)

Total Length in Centimeters	Goldeye	Goldeye	Mooneye	Mooneye	Northern	Northern pike	Northern pike	Northern pike	Carp
	Fall	Total	Spring	Fall	Total	Spring	Fall	Total	Spring
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9	`				· · · · · · · · · · · · · · · · · · ·				
10.0 - 11.9									
12.0 - 13.9									
14.0 - 15.9		ļ							
16.0 - 17.9									1
18.0 - 19.9	ļ	<b></b>					L	· · · · · · · · · · · · · · · · · · ·	
20.0 - 21.9		ļ							
22.0 - 23.9			1		1			ļ	2
24.0 - 25.9									
26.0 - 27.9									
28.0 - 29.9			3		3	<u> </u>	<u> </u>	<u> </u>	
30.0 - 31.9			4		5				
32.0 - 33.9		· · · · · · · · · · · · · · · · · · ·	10	1		· · ·	<u> </u>		
34.0 - 35.9			1			<u> </u>		<u> </u>	·
36.0 - 37.9						<u> </u>			
38.0 - 39.9		ļ	ļ		l	Ļ	L		3
40.0 - 44.9		6	1			1	1	1	21
45.0 - 49.9	J3	0							27
50.0 - 54.9	<u> </u>	<u>† – – – – – – – – – – – – – – – – – – –</u>				<u> </u>			2/
55.0 - 59.9						2			10
60.0 - 64.9						2	2	6	6
65.0 - 69.9		+	<u> </u>			2	Δ	6	4
70.0 - 74.9	†	1				1	3	4	
75.0 - 79.9							2	2	
80.0 - 84.9		1				1	1	2	
85.0 - 89.9							1	1	
90.0 - 94.9						T	3	3	
95.0 - 99.9									
100.0 - +									
Others not meas.		1	1		1		<u> </u>		2
Total unmeasured		1	1		1				2
Total measured	3	6	19	2	21	9	17	26	129
Grand Total	3	7	20	2	22	9	17	26	131
	<u> </u>	<u> </u>	<b>_</b>			ļ	ļ	ļ	ļ
<u> </u>	<u> </u>		ļ	ļ	<b> </b>	<b>_</b>		ļ	
	<b> </b>						<b></b>	<u> </u>	
	<b> </b>		<u> </u>		<b> </b>		ļ	<u> </u>	<b> </b>
	<u> </u>				<u> </u>				1

Table 2.4-8. Length-frequencies of all fish caught in gill nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, and 3 combined, seasons separated. (Sheet 3 of 8)

Total Length in Centimeters	Carp	Carp	Quillback carp- sucker	Highfin carp- sucker	Small- mouth buffalo	Small- mouth buffalo	Small- mouth buffalo	Bigmouth buffalo	Shorthead redhorse
	Fall	Total	Spring*	Spring*	Spring	Fall	Total	Spring*	Spring
				· · · · · ·					
Y/Y not meas.									
0.1 - 1.9			ļ					ļ	
2.0 - 3.9					L			L	
4.0 - 5.9				<u> </u>		ļ		L	
6.0 - 7.9						ļ			ļ
8.0 - 9.9			<b> </b>						
10.0 - 11.9									 
12.0 - 13.9						1	1		
14.0 - 15.9					2	3	5		ļ
16.0 - 17.9			<b> </b>		2	2	4	1	<u> </u>
18.0 - 19.9					44		4	5	
20.0 - 21.9					2		22	9	
22.0 - 23.9		2			2	<u> </u> l	33	10	
24.0 - 25.9		<u> </u>		ļ		<u> </u>	[]	<u> </u>	
20.0 - 27.9					I	+	<u> </u> 1		+
28.0 - 29.9			+	<u> </u> !		1		. 8	<u> </u>
30.0 - 31.9									3
32.0 - 33.9		2	2		<u> </u>	+	<u> </u>		/
36.0 - 37.9		<u> </u>	2		+		<u> </u>		44
38.0 - 39.9	L	2	- <u> </u>	<u> </u>				+	18 18
38.0 - 59.9			<b>_</b>	<u> </u>		4	L		25
40.0 - 44.9		21	4	1 T	1 1	1	1 1	2	54
45.0 - 49.9	2	39	2	1	<u> </u>	1	<u> </u>		14
50.0 - 54.9	5	45					1	2	1
55.0 - 59.9	4	16			1		1		
60.0 - 64.9	2	8							
65.0 - 69.9		4							
70.0 - 74.9									
75.0 - 79.9									
80.0 - 84.9									
85.0 - 89.9				1			<u> </u>		
90.0 - 94.9		<u> </u>		ļ	<u> </u>	ļ			ļ
95.0 - 99.9					ļ		ļ		
100.0 - +	L	<u> </u>		·			<u> </u>	- <u> </u>	+
	ļ	<b>_</b>	+	<b>_</b>				+	+
Others not meas.		2			<u> </u>		1	2	3
Total unmeasured		2	+	<u> </u>	+	+		$\frac{2}{1}$	3
lotal measured	17	146	12	2		·/ ····	24	42	125
Grand total	17	148	12	2	18	7	25	44	128
		+	+	+	+	+	+	+	+
+		<u> </u>	+	+	+		+	+	+
	+				+		+	+	+
	+	+		+	+		+		
	+	+	-t	+	+		+	+	

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Table 2.4-8.	Length-frequenci	es of all	fish cau	ght in gill n	ets from the	Mississippi	River and
	connecting water	s near th	e Prairie	Island Nucle	ar Generating	Plant, Red	Wing,
	Minnesota, 1978.	Section	s 0, 1, a	nd 3 combined	, seasons sep	arated. (S	heet 4 of 8)

Total Length in Centimeters	Shorthead redhorse Fall	Shorthead redhorse Total	Black bullhead Spring	Black bullhead Fall	Black bullhead Total	Yellow bullhead Spring*	Channel catfish Spring	Channel catfish Fall	Channel catfish Total
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9					· · · · · · · · · · · · · · · · · · ·				
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9	ļ								
10.0 - 11.9							ļ		
12.0 - 13.9						·			
14.0 - 15.9									
16.0 - 17.9			5		5	<u> </u>		<u> </u>	
18.0 - 19.9		L	7		7		1		1
20.0 - 21.9			3		3		1		1
22.0 - 23.9	ļ		2	11	3	1			
24.0 - 25.9			3	4	7	ļ	ļ	<u> </u>	1
26.0 - 27.9	ļ	<b> </b>	2	4	6	ļ			
28.0 - 29.9			2	3	5	ļ	<u> </u>	<u>  · ı</u>	2
30.0 - 31.9		3		1	1		1		1
32.0 - 33.9		7	1		<u> </u>	L			
34.0 - 35.9		4							
36.0 - 37.9		18						1	1
38.0 - 39.9	1	26			<u> </u>	<u> </u>	3	2	5
		+	1	i	+	<b>1</b>	1	1	·
40.0 - 44.9	10	64			}	<u> </u>	4		5
45.0 - 49.9	4	18					6	5	11
50.0 - 54.9						-	4	6	10
55.0 - 59.9	+				·			2	2
60.0 - 64.9	<u> </u>						· · · · · · · · · · · · · · · · · · ·		
65.0 - 69.9								1	
/0.0 - /4.9									· · · ·
/5.0 - 79.9	+		· · ·			+	+	+	
80.0 - 84.9			<u> </u>						
85.0 - 89.9		+	<u> </u>		+				
90.0 - 94.9			<u> </u>		+	1	+	1	
100 0 - +		<u> </u>	<u> </u>		<u> </u>	+	<u> </u>	1	
100.0	+	1	+			1		+	
Others not meas	1 1	Δ	1		1	· ·	1 1	1	1
Total unmascunad	1 1 1 1	1	' 1 1		<u> </u>	1	<u>i</u>		1
Total management	1 15	110	25	12	20	1 1	21	20	41
Grand Total	16	144	26	13	39	† <u>i</u>	22	20	42
	1	1		<u> </u>		1			
	1	1			1	1	1		1
	1	1	· · · · ·	t	<u> </u>	1	1	1	
	1	1	1	<b></b>	1	1	1		1
					1		1		·
	,				1			1	1

\* This species was caught during only one season.

Table 2.4-8. Length-frequencies of all fish caught in gill nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, and 3 combined, seasons separated. (Sheet 5 of 8)

·	Construction in the local data in the local data and the local data and the local data and the local data and t	a to the second s					NATION OF STREET, STRE		
	Flathead	White	White	White	Rock	Rock	Rock	Green	Green
Total Length	- ruciicuu	hase	have	have	have	hock	hock	ureen	ureen
in Centimeters	catrisn	Dass	Dass	Dass	Dass	Dass	Dass	suntish	Suntish
	Spring*	Spring	Fall	Total	Spring	Full	Total	Spring	Fall
		1		1				1	1
Y/Y not meas.			1					1	
· · · · · · · · · · · · · · · · · · ·			1	-		-			
0.1 - 1.9		1							
20 - 39			+						
4.0 - 5.9		1							
4.0 - 3.9		<u> </u>							
0.0 - 7.9	<u> </u>								+
8.0 - 9.9		<u> </u>		+	+				
10.0 - 11.9	<u> </u>	<u> </u>							
12.0 - 13.9		18		21	2		2	1	
14.0 - 15.9		35				_ <u></u>			
16.0 - 17.9		3		33	44		5		
18.0 - 19.9	ļ	<u> </u>	<u> </u>	2		2	2		
20.0 - 21.9		7		7	· · · · · · · · · · · · · · · · · · ·				
22.0 - 23.9		92		92					
24.0 - 25.9		52	10	62					
26.0 - 27.9		26	11	37					
28.0 - 29.9		2	7	9					
30.0 - 31.9	1	7	3	10				1	
32.0 - 33.9		8	6	14			1		1
34.0 - 35.9		10		15	-				
36.0 - 37.9		1 10		12					
38.0 - 39.9	<u> </u>	1 2							
		1	4	<u>/</u>					
40.0 - 44.9		1	1						
45.0 - 49.9		-{							
<u>40.0 - 49.9</u>		+							
55.0 50.0			-						
55.0 - 59.9									
60.0 - 64.9		+							
65.0 - 69.9	<u> </u>	+							····
70.0 - 74.9		4							
75.0 - 79.9	<u> </u>	+							
80.0 - 84.9	<u> </u>								
85.0 - 89.9									
90.0 - 94.9									
95.0 - 99.9			_		_				
100.0 - +									
	ļ								
Others not meas.	ļ	11	1	12					
Total unmeasured		111	1	12					
Total measured	1	274	55	329	6	4	10	1	1
Grand Total	1	285	56	341	6	4	10	1	1
1	1	1							
	1				1				1
	1	1							
	1								

1

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Total Length in Centimeters	Green sunfish	Bluegill	Bluegill	Bluegill	Largemout bass	White crappie	White crappie	White crappie	Bl <b>a</b> ck crappie
	Total	Spring	Fall	Total	Spring*	Spring	Fall	Total	Spring
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9	ļ								
4.0 - 5.9									
6.0 - 7.9	ļ			l					
8.0 - 9.9				ļ		· · · · · · · · · · · · · · · · · · ·			1
10.0 - 11.9						15		15	34
12.0 - 13.9	1	1				30		30	1
14.0 - 15.9	1	3		3					
10.0 - 17.9		2		3		2	3	5	5
		+		<u>↓                                     </u>		14	3	1/	14
20.0 - 21.9				l		0	0	12	0
22.0 - 25.9						1	2	2	3
26.0 - 27.9	<u> </u>	1				3		3	2
28.0 - 29.9	1		<u> </u>				1	1	
30.0 - 31.9	<u> </u>				<u> </u>		2	2	
32.0 - 33.9	1						2	2	
34.0 - 35.9	1	1	1					<u> </u>	
36.0 - 37.9									
38.0 - 39.9									
		-			•		•	•	
40.0 - 44.9									
45.0 - 49.9									
50.0 - 54.9			L				L		
55.0 - 59.9	<u> </u>				ļ				
60.0 - 64.9			ļ		ļ				
65.0 - 69.9							ļ	<u> </u>	
70.0 - 74.9	ļ	<u> </u>		ļ	ļ				
75.0 - 79.9	<u> </u>				┝		<b>_</b>		
80.0 - 84.9							+		
85.0 - 89.9		+		}			<u> </u>		
90.0 - 94.9									
<u> </u>	+	+	+	+	t		+	+	
100.0 - +									
Others not meas.	+		1	1 1	1	5	<del> </del>	5	2
Total unmeasured	1	1	1 1	1		5	+	5	2
Total measured	2	6	2	8	1	85	23	108	80
Grand Total	2	6	3	9	1	90	23	113	82
	L		ļ	·		ļ	ļ	<u> </u>	
1	1	,	1	1	1	1		1	1

Table 2.4-8.	Length-frequencies of a	11 fish caught in gill ne	ts from the Mississip	pi River and
	connecting waters near	the Prairie Island Nuclear	r Generating Plant, R	led Wing,
	Minnesota, 1978. Sect	ons 0, 1, and 3 combined,	seasons separated.	(Sheet 6 of 8)

\* This species was caught during only one season.

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Table 2.4-8. Length-frequencies of all fish caught in gill nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, and 3 combined, seasons separated. (Sheet 7 of 8)

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	Black	Black	Yellow	Yellow	Yellow	Sauger	Sauger	Sauger	Walleye
Total Length	crannie	Crappie	Perch	Perch	Derch	e augu,	- and get		
in Centimeters	arappie	- Tuppid							
				- 17			P-11	T. 4. 1	Caudaa
	Fall	Total	Spring	Fall	lotal	Spring	Fall	Ιοται	Spring
					<u> </u>		<b></b>		
Y/Y not meas.		<u> </u>	<u> </u>						
. 1 1 0							<u></u>		
0.1 - 1.9			<u> </u>	<u> </u>		+	+		
2.0 - 3.9	<u> </u>		<u> </u>	<u> </u>		+			
4.0 - 5.9	<u> </u>		<u> </u>	[		+			
6.0 - 7.9		<u> </u>	+						
8.0 - 9.9			+		+	+	+		
10.0 - 11.9	<u> </u>						+		
14.0 - 15.9	<u> </u>	1 11	<u> </u>	<u> </u>					
16.0 - 17.9	<u> </u>		E	1	6	+	+		
18.0 - 19.9	3	<u>ک</u> ۱۶	<u>ן 5</u> זג		10	+	+	+	
20.0 - 21.9	· · · ·	10	2	5	7	1 1		1	
22.0 - 23.9		9	1 1		$\frac{1}{1}$	1 11	+	111	_
24.0 - 25.9		3	1	1	1 1	14	2	16	
26.0 - 27.9		2				4	7	11	2
28.0 - 29.9	1		1			3	9	12	1
30.0 - 31.9		1				6	4	10	1
32.0 - 33.9						6	10	16	5
34.0 - 35.9			1			10	10	20	4
36.0 - 37.9						14	12	26	2
38.0 - 39.9						5	10	15	1
40.0 - 44.9						16	13	29	2
45.0 - 49.9				ļ		10	22	32	3
50.0 - 54.9						4	3	7	3
55.0 - 59.9	<b>_</b>						2	2	2
60.0 - 64.9				+					
65.0 - 69.9			+	+					
70.0 - 74.9									
75.0 - 79.9		+							
80.0 - 84.9	+		+	+	+			_	
90.0 - 9/ 9	+			+	+			+	
95.0 - 94.9	+		+	+			-		
100.0 - +		+	+	+	+		-		
	+	+	1	+		+	1		
Others not meas	2	4	1	1		1		1	
Total unmeasured	2	4	1	1		1		1	
Total measured	17	97	27	10	37	104	104	208	26
Grand Total	19	101	27	10	37	105	104	209	26
			;						
	_ <u></u>								

Table 2.4-8. Length-frequencies of all fish caught in gill nets from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, and 3 combined, seasons separated. (Sheet 8 of 8)

Total Length in Centimeters	Walleye	Walleye	Freshwater drum	Freshwater drum	Freshwaten drum		(		
	Fall	Total	Spring		lotal				
Y/Y not meas.				1	1				
		ļ							
0.1 - 1.9									
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9									
10.0 - 11.9									
12.0 - 13.9			7		18				
14.0 - 15.9			9	12	21				
16.0 - 17.9			10						<u> </u>
18.0 - 19.9			4	5	9				
20.0 - 21.9			16	3	19				
22.0 - 23.9			14		14				
24.0 - 25.9					10				
28.0 - 29.9		2		2	11				
30.0 - 31.9			9	2	14				
32.0 - 32.9	2			3	4				
34.0 - 35.9		6	<u> </u>	1					
36.0 - 37.9	2	0	1	1	1				
3010 3717	<u> </u>	<del>1</del>	<u> </u>		<u> </u>				
38 0 - 39,9		1 2							R. Barre
38.0 - 39.9	22	3				l			All Barres
<u>38.0 - 39.9</u> 40.0 - 44.9	2	3	 	· · · · · · · · · · · · · · · · · · ·	1	[		 	1 aires
38.0 - 39.9     40.0 - 44.9     45.0 - 49.9	2	3	1		11				
<u>38.0 - 39.9</u> <u>40.0 - 44.9</u> <u>45.0 - 49.9</u> <u>50.0 - 54.9</u>	2	3 2 4 3	1		1				
$   \begin{array}{r} 38.0 - 39.9 \\                                   $	2	3 2 4 3 2	1		1				
38.0 - 39.9     40.0 - 44.9     45.0 - 49.9     50.0 - 54.9     55.0 - 59.9     60.0 - 64.9	2	3 2 4 3 2 1	1		1				
38.0 - 39.9 $40.0 - 44.9$ $45.0 - 49.9$ $50.0 - 54.9$ $55.0 - 59.9$ $60.0 - 64.9$ $65.0 - 69.9$	2	3 2 4 3 2 1	1		1				
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	2	3 2 4 3 2 1			1				
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	2	3 2 4 3 2 1			1				
38.0 - 39.9 $40.0 - 44.9$ $45.0 - 49.9$ $50.0 - 54.9$ $55.0 - 59.9$ $60.0 - 64.9$ $65.0 - 69.9$ $70.0 - 74.9$ $75.0 - 79.9$ $80.0 - 84.9$	2	3 2 4 3 2 1			1				
38.0 - 39.9 $40.0 - 44.9$ $45.0 - 49.9$ $50.0 - 54.9$ $55.0 - 59.9$ $60.0 - 64.9$ $65.0 - 69.9$ $70.0 - 74.9$ $75.0 - 79.9$ $80.0 - 84.9$ $85.0 - 89.9$	2	3 2 4 3 2 1			1				
38.0 - 39.9 $40.0 - 44.9$ $45.0 - 49.9$ $50.0 - 54.9$ $55.0 - 59.9$ $60.0 - 64.9$ $65.0 - 69.9$ $70.0 - 74.9$ $75.0 - 79.9$ $80.0 - 84.9$ $85.0 - 89.9$ $90.0 - 94.9$	2	3 2 4 3 2 1							
38.0 - 39.9 $40.0 - 44.9$ $45.0 - 49.9$ $50.0 - 54.9$ $55.0 - 59.9$ $60.0 - 64.9$ $65.0 - 69.9$ $70.0 - 74.9$ $75.0 - 79.9$ $80.0 - 84.9$ $85.0 - 89.9$ $90.0 - 94.9$ $95.0 - 99.9$	2	3 2 4 3 2 1 1							
38.0 - 39.9 $40.0 - 44.9$ $45.0 - 49.9$ $50.0 - 54.9$ $55.0 - 59.9$ $60.0 - 64.9$ $65.0 - 69.9$ $70.0 - 74.9$ $75.0 - 79.9$ $80.0 - 84.9$ $85.0 - 89.9$ $90.0 - 94.9$ $95.0 - 99.9$ $100.0 - +$	2	3 2 4 3 2 1							
38.0 - 39.9 $40.0 - 44.9$ $45.0 - 49.9$ $50.0 - 54.9$ $55.0 - 59.9$ $60.0 - 64.9$ $65.0 - 69.9$ $70.0 - 74.9$ $75.0 - 79.9$ $80.0 - 84.9$ $85.0 - 89.9$ $90.0 - 94.9$ $95.0 - 99.9$ $100.0 - +$	2	3 2 4 3 2 1							
38.0 - 39.9 40.0 - 44.9 45.0 - 49.9 50.0 - 54.9 55.0 - 59.9 60.0 - 64.9 65.0 - 69.9 70.0 - 74.9 75.0 - 79.9 80.0 - 84.9 85.0 - 89.9 90.0 - 94.9 95.0 - 99.9 100.0 - + Others not meas.	2	3 2 4 3 2 1 1	2		2				
38.0 - 39.9 40.0 - 44.9 45.0 - 49.9 50.0 - 54.9 55.0 - 59.9 60.0 - 64.9 65.0 - 69.9 70.0 - 74.9 75.0 - 79.9 80.0 - 84.9 85.0 - 89.9 90.0 - 94.9 95.0 - 99.9 100.0 - + Others not meas. Total unmeasured	2	3 2 4 3 2 1 1 							
38.0 - 39.9 40.0 - 44.9 45.0 - 49.9 50.0 - 54.9 55.0 - 59.9 60.0 - 64.9 65.0 - 69.9 70.0 - 74.9 75.0 - 79.9 80.0 - 84.9 85.0 - 89.9 90.0 - 94.9 95.0 - 99.9 100.0 - + Others not meas. Total unmeasured Total measured		3 2 4 3 2 1 1 3 37			1 2 3 151				
38.0 - 39.9 40.0 - 44.9 45.0 - 49.9 50.0 - 54.9 55.0 - 59.9 60.0 - 64.9 65.0 - 69.9 70.0 - 74.9 75.0 - 79.9 80.0 - 84.9 85.0 - 89.9 90.0 - 94.9 95.0 - 99.9 100.0 - + Others not meas. Total unmeasured Total measured Grand Total	2	3 2 4 3 2 1 1 	1 		1 2 3 151 154				
38.0 - 39.9 40.0 - 44.9 45.0 - 49.9 50.0 - 54.9 55.0 - 59.9 60.0 - 64.9 65.0 - 69.9 70.0 - 74.9 75.0 - 79.9 80.0 - 84.9 85.0 - 89.9 90.0 - 94.9 95.0 - 99.9 100.0 - + Others not meas. Total unmeasured Grand Total	2	3 2 4 3 2 1 1 	1 		1 2 3 151 154				
38.0 - 39.9 40.0 - 44.9 45.0 - 49.9 50.0 - 54.9 55.0 - 59.9 60.0 - 64.9 65.0 - 69.9 70.0 - 74.9 75.0 - 79.9 80.0 - 84.9 85.0 - 89.9 90.0 - 94.9 95.0 - 99.9 100.0 - + Others not meas. Total unmeasured Grand Total	2	3 2 4 3 2 1 1 	1 2 2 113 115	1 38 39	1 2 3 151 154				
38.0 - 39.9 40.0 - 44.9 45.0 - 49.9 50.0 - 54.9 55.0 - 59.9 60.0 - 64.9 65.0 - 69.9 70.0 - 74.9 75.0 - 79.9 80.0 - 84.9 85.0 - 89.9 90.0 - 94.9 95.0 - 99.9 100.0 - + Others not meas. Total unmeasured Total measured Grand Total		3 2 4 3 2 1 1 3 37 37 37	1 2 2 113 115		1 2 3 151 154				
38.0 - 39.9 40.0 - 44.9 45.0 - 49.9 50.0 - 54.9 55.0 - 59.9 60.0 - 64.9 65.0 - 69.9 70.0 - 74.9 75.0 - 79.9 80.0 - 84.9 85.0 - 89.9 90.0 - 94.9 95.0 - 99.9 100.0 - + Others not meas. Total unmeasured Total measured Grand Total	2	3 2 4 3 2 1 1 3 3 37 37 37	1 2 2 113 115		1 2 3 151 154				

Species	Ab	ove Plant	*Plan plan Lock	nt Area (from nt intake to k and Dam 3)	*Below Lock & Dam 3
	No.	(for 7.50 h)	No.	(for 1.25 h)	
Shortnose gar	2	0.27	]	0.80	9700009990-0949600000000000000000000000000
Bowfin	2	0.27	0	0	
Gizzard shad	55	7.33	4	3.20	
Mooneye	16	2.13	0	0	
Carp	76	10.13	12	9.60	
Silver chub	1	0.13	0	0	
Emerald shiner	18	2.40	5	4.00	
Pugnose minnow	1	0.13	0	0	
Spottail shiner	8	1.07	0	0	
Spotfin shiner	4	0.53	1	0.80	
Bullhead minnow	13	1.73	0	0	
Carpsucker spp.	6	0.80	1	0.80	
River carpsucker	3	0.40	0	0	
Quillback carpsucker	1	0.13	0	0	
White sucker	3	0.40	0	0	
Smallmouth buffalo	3	0,40	5	4.00	
Bigmouth buffalo	0	0	1	0.80	
Silver redhorse	0	0	1	0.80	
Shorthead redhorse	21	2.80	8	6.40	
Channel catfish	5	0.67	6	4.80	
Flathead catfish	0	0	2	1.60	
White bass	32	4.27	7	5.60	
Rock bass	9	1.20	1	0.80	
Hybrid sunfish	2	0.27	0	0	
Green sunfish	_3	0.40	- 9	7.20	
Bluegill	71	9.47	9	7.20	
Smallmouth bass	51	6.80	10	8.00	
Black crappie	8	1.07	1	0.80	
Yellow perch	9	1.20	0	0	
Log perch	2	0.27	0	0	
Sauger	41	5.47	2	1.60	
Walleye	19	2.53	1	0.80	
Freshwater drum	343	45.73	3	2.40	
Total	828	110.40	.90	72.00	

Table 2.4-9 Summary of day electrofishing catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring 1978.

\*Stations 3-5 to 3-9 (plant area) and Stations 4-0 to 4-9 (below dam) were not sampled during spring due to equipment problems.

T	ab	1	е	2	•	4-	1	(

10 Summary of day electrofishing catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, summer 1978.

Species		Above Plant	Pla pla Loc	ant Area (from ant intake to ck and Dam 3	Below Lock & Dam 3		
	No.	No./hour (for 7.50 h)	No.	No./hour (for 2.50 h)	No.	No./hour (for 2.50 h)	
Chestnut lamprey Shortnose gar Bowfin Gizzard shad Mooneye Northern pike Carp Silver chub Emerald shiner Spottail shiner Spotfin shiner Bullhead minnow Carpsucker spp. River carpsucker Quillback carpsucker White sucker Smallmouth buffalo Bigmouth buffalo Redhorse spp. Silver redhorse Shorthead redhorse Channel catfish Flathead catfish Flathead catfish Shorthead redhorse Channel catfish Flathead catfish Bluegill Smallmouth bass Largemouth bass White crappie Black crappie Black crappie Black crappie Johnny darter Yellow perch Log perch Sauger Walleye Freshwater drum	$\begin{array}{c} 0\\ 2\\ 1\\ 396\\ 0\\ 2\\ 150\\ 3\\ 207\\ 11\\ 0\\ 4\\ 7\\ 1\\ 6\\ 10\\ 1\\ 2\\ 3\\ 1\\ 67\\ 6\\ 0\\ 16\\ 105\\ 48\\ 2\\ 2\\ 3\\ 0\\ 12\\ 9\\ 53\\ 8\\ 440 \end{array}$	$\begin{array}{c} 0\\ 0.27\\ 0.13\\ 52.80\\ 0\\ 0.27\\ 20.00\\ 0.40\\ 27.60\\ 1.47\\ 0\\ 0.53\\ 0.93\\ 0.13\\ 2.13\\ 0.13\\ 0.13\\ 0.13\\ 0.27\\ 0\\ 0\\ 1.3\\ 0.13\\ 3.07\\ 1.07\\ 0.13\\ 8.93\\ 0.80\\ 0\\ 2.13\\ 14.00\\ 6.40\\ 0\\ 2.13\\ 14.00\\ 6.40\\ 0\\ 0\\ 1.60\\ 1.20\\ 7.07\\ 1.07\\ 58.67\end{array}$	$\begin{array}{c} 0\\ 1\\ 0\\ 97\\ 1\\ 0\\ 42\\ 0\\ 9\\ 9\\ 1\\ 6\\ 1\\ 0\\ 4\\ 0\\ 1\\ 4\\ 0\\ 1\\ 6\\ 0\\ 29\\ 1\\ 5\\ 4\\ 95\\ 1\\ 1\\ 1\\ 2\\ 1\\ 9\\ 2\\ 4\\ 1\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\$	$\begin{array}{c} 0\\ 0.40\\ 0\\ 38.80\\ 0.40\\ 0\\ 16.80\\ 0\\ 3.60\\ 3.60\\ 3.60\\ 0.40\\ 2.40\\ 0.40\\ 0\\ 1.60\\ 0\\ 5.60\\ 1.20\\ 0\\ 0\\ 5.60\\ 1.20\\ 0\\ 0\\ 1.60\\ 0\\ 0.40\\ 2.00\\ 1.60\\ 38.00\\ 4.40\\ 1.60\\ 0.40\\ 3.60\\ 0.40\\ 3.60\\ 0.80\\ 1.60\\ 0.40\\ 29.60\\ \end{array}$	$1 \\ 0 \\ 9 \\ 0 \\ 50 \\ 174 \\ 0 \\ 0 \\ 112 \\ 12 \\ 0 \\ 012 \\ 0 \\ 881 \\ 11 \\ 162 \\ 0 \\ 23 \\ 0 \\ 355 \\ 9 \\ 112 \\ 166 \\ 23 \\ 0 \\ 23 \\ 0 \\ 355 \\ 9 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 100 \\ 10$	$\begin{array}{c} 0.40\\ 0\\ 0\\ 0\\ 3.60\\ 0\\ 0\\ 20.00\\ 0.40\\ 69.60\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0$	
Total	1608	214.40	463	185.20	463	185.20	

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Species		Above Plant	Pla pla Loc	nt Area (from nt intake to k and Dam 3)	Be	Below Lock & Dam 3		
	No.	No./hour (for 7.50 h)	No.	No./hour (for 2.50 h)	No.	No./hour (for 2.50 h)		
Silver lamprey Bowfin Gizzard shad Mooneye Carp Silver chub Emerald shiner Spottail shiner Spottail shiner Bullhead minnow Carpsucker spp. River carpsucker Quillback carpsucker White sucker Smallmouth buffalo Bigmouth buffalo Silver redhorse Shorthead redhorse Channel catfish Flathead catfish Flathead catfish White bass Rock bass Hybrid sunfish Green sunfish Orangespotted sunfis Bluegill Smallmouth bass Largemouth bass White crappie Black crappie Yellow perch Log perch Sauger Walleye	$\begin{array}{c} 0\\ 2\\ 385\\ 1\\ 95\\ 2\\ 47\\ 7\\ 1\\ 4\\ 3\\ 2\\ 2\\ 0\\ 2\\ 1\\ 1\\ 10\\ 1\\ 0\\ 37\\ 14\\ 2\\ 1\\ 1\\ 0\\ 37\\ 14\\ 2\\ 1\\ 1\\ 0\\ 37\\ 14\\ 2\\ 1\\ 1\\ 1\\ 0\\ 37\\ 1\\ 4\\ 1\\ 8\\ 3\\ 1\\ 24\\ 9\end{array}$	$\begin{array}{c} 0\\ 0.27\\ 51.33\\ 0.13\\ 12.67\\ 0.27\\ 6.27\\ 0.93\\ 0.13\\ 0.53\\ 0.40\\ 0.27\\ 0.27\\ 0.27\\ 0.27\\ 0.27\\ 0.13\\ 0.13\\ 1.33\\ 0.13\\ 1.33\\ 0.13\\ 1.33\\ 0.13\\ 1.33\\ 0.13\\ 1.33\\ 0.13\\ 1.47\\ 0\\ 5.33\\ 4.40\\ 0\\ 0\\ 5.33\\ 4.40\\ 0\\ 0.53\\ 2.40\\ 0.40\\ 0.13\\ 3.20\\ 1.20\\ \end{array}$	$\begin{array}{c} 2\\ 0\\ 113\\ 0\\ 62\\ 0\\ 30\\ 2\\ 0\\ 1\\ 0\\ 0\\ 2\\ 0\\ 5\\ 0\\ 0\\ 7\\ 7\\ 5\\ 29\\ 5\\ 20\\ 8\\ 1\\ 157\\ 10\\ 7\\ 20\\ 13\\ 0\\ 0\\ 2\\ 13\end{array}$	$\begin{array}{c} 0.80\\ 0\\ 45.20\\ 0\\ 24.80\\ 0\\ 12.00\\ 0.80\\ 0\\ 0\\ 0.40\\ 0\\ 0\\ 0\\ 2.00\\ 0\\ 2.00\\ 0\\ 2.80\\ 2.80\\ 2.00\\ 11.60\\ 2.80\\ 2.00\\ 11.60\\ 2.00\\ 8.00\\ 3.20\\ 0.40\\ 62.80\\ 4.00\\ 2.80\\ 8.00\\ 5.20\\ 0\\ 0\\ 0.80\\ 5.20\end{array}$	$\begin{array}{c} 0\\ 0\\ 221\\ 7\\ 110\\ 1\\ 24\\ 0\\ 0\\ 5\\ 2\\ 3\\ 1\\ 0\\ 5\\ 0\\ 14\\ 1\\ 0\\ 59\\ 16\\ 1\\ 2\\ 0\\ 162\\ 13\\ 3\\ 15\\ 0\\ 10\\ 7\end{array}$	$\begin{array}{c} 0\\ 0\\ 88.40\\ 2.80\\ 44.00\\ 0.40\\ 9.60\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0$		
Total	40 808	107.73	б 527	2.40	28 713	285.20		

Table 2.4-11 Summary of day electrofishing catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, fall 1978.

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Table 2.4-12.	Length-frequencies of all fish caught by electrofishing in the Mississippi River and
	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota,
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 1 of 16)

Total Length in Centimeters	Chestnut lamprey	Silver lamprey	Shortnose gar	Shortnose gar	Shortnose gar	Bowfin	Bowfin	Bowfin	Bowfin
	Summer *	Fall*	Spring	Summer	Total	Spring	Summer	Fall	Total
Y/Y not meas.							1		
0.1 - 1.9									T
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9									
10.0 - 11.9							_		
12.0 - 13.9									
14.0 - 15.9			L						
16.0 - 17.9									
18.0 - 19.9				ļ					
20.0 - 21.9									
22.0 - 23.9					ļ			1	1
24.0 - 25.9					<u> </u>	ļ	+		
26.0 - 27.9	ļ								
28.0 - 29.9				ļ	ļ	ļ			
30.0 - 31.9				ļ	ļ		· · · ·		
32.0 - 33.9					ļ				
34.0 - 35.9				ļ		ļ	ļ		
36.0 - 37.9	ļ						ļ		1
38.0 - 39.9						<u> </u>	L		
		1	1	1	1	1	1		
40.0 - 44.9		<b> </b>	+				+		
43.0 - 49.9				<u>_</u>	<u> </u>			+	
55.0 - 59.9			+	<u>├</u>	2	<u>                                     </u>	<u> </u>		2
60.0 64.9							+		
65.0 - 69.9		1		<u> </u>	3				
70.0 - 74.9	1						1		
75.0 - 79.9	1								
80.0 - 84.9	1	1	+	+	1	1	+		
85.0 - 89.9	1	1	1	1		1		1	-
90.0 - 94.9	1	1		1		1	1	-	
95.0 - 99.9	T		1		1	1			
100.0 - +									i per sala <sup>manda</sup> r
				ļ	<b> </b>	ļ			
Others not meas.	1	2		<u> </u>		· · · · · · · · · · · · · · · · · · ·	· ·		
Total unmeasured		2	+	+	+	+	+	+	
Grand Total			3		6	2		2	5
aranu lotal	<u>├</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	2		2	
		+	· · ·	+	+		1	+	
			·		+	+	+		-+
	<u> </u>		+	1.	+		+		-
			-	1	1	1	+		and the second sec
	1	.t	1			±	<u>.</u>		- Karthanna -

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 2 of 16)

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Total Length in Centimeters	Gizzard shad	Gizzard shad	Gizzard shad	Gizzard shad	Mooneye	Mooneye	Mooneye	Mooneye	Northern pike
	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total	Summer*
Y/Y not meas.		112	270	382					
0.1 - 1.9		ļ			<u> </u>			ļ	
2.0 - 3.9		39	L	39	<u> </u>	4			
4.0 - 5.9		54		54					
6.0 - 7.9	6	14	3	23	+	- <u> </u>			
8.0 - 9.9		4	4	8		+	+		
10.0 - 11.9		1/	15	32	+				
12.0 - 13.9		63	44	201					
14.0 - 15.9		22	105	13/	+	+			
10.0 - 17.9	<u> </u>	23	10	21	1	+	+		
18.0 - 19.9		<u> </u>	19	10	+			+	
20.0 - 21.9	5	<u> </u>		5					+
22.0 - 25.9	2	2	<u> </u>	4	+	-			
26.0 - 27.9	<u> </u>	3	5	8		-	1 1	1 1	+
28.0 - 29.9	2	15	8	25	1		1	<u>† †</u>	1
30.0 - 31.9	9	3	13	25	1		5	5	+
32.0 - 33.9	13	5	4	22	10	1		11	
34.0 - 35.9	13	9	8	30	6		1	7	
36.0 - 37.9	1	7	10	17	1	-			
38.0 - 39.9	1	1	6	7	1				1
			+				·····	···•	
40.0 - 44.9			3	3					
45.0 - 49.9									
50.0 - 54.9									
55.0 - 59.9	ļ			-					
60.0 - 64.9									
65.0 - 69.9	ļ	ļ							
70.0 - 74.9		<u> </u>							$\frac{1}{1}$
75.0 - 79.9	ļ				- <b> </b>				+
80.0 - 84.9					+			+	
85.0 - 89.9	+		+	+					
90.0 - 94.9	+	+	+		+				
95.0 - 99.9		+	+	+	-+			-+	
100.0 - +	+	+	+	+				+	
011	+	1 00	10	22					
Total unmeasured		135	280	415					
Total measured	59	367	439	865	16	1	8	25	2
Grand Total	59	502	719	1280	16	1	8	25	2
	1	1	1	+	-	-			-
	1	1	:	-	1				
1	1	1		1		-			•
	1			1					-
			المتكافقي سيبيست فكاليب ومتناكل وسمه						

Table 2.4-12.	Length-frequencies of all fish caught by electrofishing in the Mississippi River and
	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota,
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 3 of 16)

Total Length in Centimeters	Carp	Carp	Carp	Carp	Silver chub	Silver chub	Silver chub	Silver chub	Emerald shiner
	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total	Spring
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9		1		1					
4.0 - 5.9					[				
6.0 - 7.9									1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
8.0 - 9.9									
10.0 - 11.9									
12.0 - 13.9									
14.0 - 15.9						1		1	
16.0 - 17.9	1			1					
18.0 - 19.9	1	1		2			1	1	
20.0 - 21.9	2			2					
22.0 - 23.9	1			1					
24.0 - 25.9		1	1	2	1			<b></b>	
26.0 - 27.9		ļ		a				ļ	
28.0 - 29.9	1		2	4					Sycamory 2
30.0 - 31.9	1	1	3	5					
32.0 - 33.9		5	3	8					
34.0 - 35.9		4	5	9					
36.0 - 37.9		3	5	8				<u> </u>	
38.0 - 39.9	1	1	4	6					
		+			+		•	+	
40.0 - 44.9	3	19	16	38				<u> </u>	
45.0 - 49.9	26	85	65	176				ļ	
50.0 - 54.9	29	67	85	181				ļ	
55.0 - 59.9	13	31	44	88			· · · · · ·	ļ	
60.0 - 64.9	6	13	22	41	<u> </u>	<u> </u>			
65.0 - 69.9	2	/	/	16				<u> </u>	
70.0 - 74.9			3	3					
75.0 - 79.9	<b> </b>		<u>                                      </u>	1	<u> </u>		<b> </b>		
80.0 - 84.9					+				<u> </u>
85.0 - 89.9	+	<u> </u>	+				<u> </u>		
90.0 - 94.9	+				<u> </u>	+	<u> </u>	<u> </u>	
95.0 - 99.9		<u> </u>					+		
100.0 - +	1					+		+	<u> </u>
	+		<u> </u>					c	22
Total unmeasured	<u>      </u>	2		4 	1 1	3	2	6	23
Total measured	07	240	266	593	<u> </u>	1 1	1	2	
Grand Total	88	242	267	597	1	4	3	8	23
	†	1 676			<u>+</u> −−'−−−		†	t	
<u> </u>	1	1	1		+	+	+		
t	1	1	· · ·		1		†		
	+	1	1		1	+		1	+
<b>***</b>	1	1	1		1		1	1	1
			· · · · · · · · · · · · · · · · · · ·	1					

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 4 of 16)

		Emovald	Emana I d	C	Crettedl	Spottaj]	Snotto i 1	Spotfin	Spotfin
Total Longth	shiner	shiner	shiner	shiner	spottail	shiner	spottall	shiner	shiner
in Centimeters									
		~ 11	<b>T</b> 1 1	<b>C</b>		F. 11	7.4.1	Couring	Summon
	Summer		IOTAI	Spring	Summer		IOTAI	spring	Summer
Y/Y not meas.							ļ		
0 1 1 0		all all and a second second second							
0.1 - 1.9								·····	
2.0 - 3.9									
4.0 - 3.9									
80 - 99					·			<u> </u>	
10.0 - 11.9					1		1		
12.0 - 13.9					·····	<u> </u>			
14.0 - 15.9	-								
16.0 - 17.9									
18.0 - 19.9	1			1	1				
20.0 - 21.9	·								
22.0 - 23.9									
24.0 - 25.9									
26.0 - 27.9									
28.0 - 29.9								· · · · · · · · · · · · · · · · · · ·	
30.0 - 31.9	ļ					ļ	ļ	ļ	
32.0 - 33.9						<u> </u>	ļ	Ļ	
34.0 - 35.9						L	ļ		
36.0 - 37.9	ļ		<u> </u>		ļ	ļ	<u> </u>	L	ļ
38.0 - 39.9		ļ		ļ	l	L	ļ	<u> </u>	
		t	<u>† – – – – – – – – – – – – – – – – – – –</u>	1	1	1	<u>†                                    </u>	1	<u>+</u>
40.0 - 44.9									+
<u>43.0 - 49.9</u> 50.0 - 5/ 9				+	<u> </u>	+		<u> </u>	
55.0 - 59.9		<b> </b>		+				+	
60.0 - 64.9	<u> </u>	<u> </u>				+	· ·	+	
65.0 - 69.9						1	+	1	
70.0 - 74.9				1					
75.0 - 79.9				1			1	1	1
80.0 - 84.9								1	
85.0 - 89.9									
90.0 - 94.9			<u> </u>						
95.0 - 99.9		L	<b>_</b>	<u> </u>	L		L	<u> </u>	
100.0 - +		<b> </b>		ļ	l		ļ	ļ	ļ
		<b> </b>	<b> </b>	<u> </u>	<b>_</b>	<u> </u>	<u> </u>	<b> </b>	+
Others not meas.	390		514	8	19	9	36	5	1 1
Iotal unmeasured	390	101	514	8	19 	- <u>9</u>	J 30		↓ · ·
Total measured	390	101	514	<u>ρ</u>	20	a	37	5	+
	+	101		+		+		+	+
		1	<u>+</u>				+	+	+
F	1	+	· · · · · ·	1			+	+	+
	1	1	1	1	1		1		+
	1		1			+	1	-	1
		J					1		

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Table 2.4-12.	Length-frequencies of all fish caught by electrofishing in the Mississippi River and
	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota,
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 5 of 16)

Total Length in Centimeters	Spotfin shiner	Spotfin shiner	Pugnose minnow	Bullhead minnow	Bullhead minnow	Bullhead minnow	Bullhead minnow	Carpsucker spp.	Carpsucker spp.
	Fall	Total	Spring*	Spring	Summer	Fall	Total	Spring	Summer
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9						1		· · · · · · · · · · · · · · · · · · ·	
4.0 - 5.9									
6.0 - 7.9									2 <sup>11</sup>
8.0 - 9.9								1	1
10.0 - 11.9								1	1
12.0 - 13.9								1	4
14.0 - 15.9				1				1	1
16.0 - 17.9								1	1
18.0 - 19.9									
20.0 - 21.9									
22.0 - 23.9									1
24.0 - 25.9		ļ							
26.0 - 27.9		ļ				ļ			
28.0 - 29.9									
30.0 - 31.9									
32.0 - 33.9		·							
34.0 - 35.9									
36.0 - 37.9									
38.0 - 39.9									
		+	• • • • • • • • • • • • • • • • • • •	<b></b>	•			+	
40.0 - 44.9					ļ	L			
45.0 - 49.9							ļ		
50.0 - 54.9		L					ļ	<u> </u>	
55.0 - 59.9	ļ	1				<u> </u>		ļ	
60.0 - 64.9	ļ		ļ	L	ļ	<u> </u>		<u> </u>	
65.0 - 69.9									- Ja <sup>n</sup>
70.0 - 74.9									· · ·
75.0 - 79.9	<b> </b>				ļ				
80.0 - 84.9	<u> </u>		<b></b>						
85.0 - 89.9	<u> </u>								
90.0 - 94.9					<u> </u>	+			
95.0 - 99.9						+			
100.0 - +									
		<u>+</u>			10	+		+	
Withers not meas.		7		13	10	5	28	+	
Total managered	<u> </u>	+	<u> </u>	1.3	10	<u> </u>		7	a
Grand Total	1 7	7	1	13	10	5	28	7	9
	<u> </u>	† <u>'</u>	<u> </u>	<u> </u>	<u> </u>	1 .	<u>+</u>		
		+	<u> </u>	1		+	+	1	
<b>†</b>		1	· · ·	<u> </u>	1		†		
	1	1		<b> </b>		1	1		
							1	1	

\* This species was caught during only one season.

Sector Sector Sector

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Name and Address of

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 6 of 16)

.

Total Length in Centimeters	Carpsucker spp.	Carpsucker spp.	River carpsucker	River carpsucker	River carpsucker	River carpsucker	Quillback carpsucker	Quillback carpsucker	Quillback carpsucken
	Fall	Total	Spring	Summer	Fall	Total	Spring	Summer	Fall
Y/Y not meas.									
0.1 - 1.9			<u></u>						
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9				·					
8.0 - 9.9		2	ļ			ļ			ļ
10.0 - 11.9	<u> </u>	2	1						
12.0 - 13.9	<u>                                      </u>	5			<u> </u>		<u> </u>		
16.0 - 17.9	2	4	<u> </u>	<u> </u>	1	<u> </u>	<u> </u>	<u> </u>	
18.0 - 19.9	3	3						2	
20.0 - 21.9	1	1						1	
22.0 - 23.9		1				ļ		2	2
24.0 - 25.9	<u> </u>	·	<b> </b>	ļ				4	
26.0 - 27.9				+		+			
30.0 - 31.9		1			<u> </u>	<u> </u>	1		
32.0 - 33.9	1							1	<u> </u>
34.0 - 35.9	1	t			1	1		3	
36.0 - 37.9				1				1	2
38.0 - 39.9						ļ		2	1
40.0 - 44.9		1	1	1 1	3	<u>А</u>	1	3	1
45.0 - 49.9		<u> </u>				1		1 1	1
50.0 - 54.9			2		1	3		1	
55.0 - 59.9									
60.0 - 64.9		ļ	ļ						
65.0 - 69.9							· · · · · · · · · · · · · · · · · · ·		
70.0 - 74.9					+				·
80.0 - 84.9		+	+	1	+	+	+	+	
85.0 - 89.9				1	1	1	1	1	1
90.0 - 94.9									
95.0 - 99.9									
100.0 - +							·		<u> </u>
Others not meas.		+	+		+	+			_
Total unmeasured			1	1		1			
Total measured	8	24	3	2	4	9	1	22	7
Grand Total	8	24	3	2	4	9	1	22	7
	+		:			· ·	+	+	
						1			
	<u> </u>			1			1		

2.4-92

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 7 of 16)

Total Length in Centimeters	Quillback carpsucker	White sucker	White sucker	White sucker	White sucker	Smallmouth buffalo	Smallmout buffalo	n <sup>Small</sup> mouth buffalo	Small Mouth buffalo
	Total	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total
Y/Y not meas.			·····						
0.1 - 1.9									
2.0 - 3.9	1								
6.0 - 7.9									
8.0 - 9.9							1		
10.0 - 11.9							2		2
12.0 - 13.9							3		3
14.0 - 15.9	<u></u>						1		1
16.0 - 17.9									
18.0 - 19.9	2					1			1
20.0 - 21.9	1					1			1
22.0 - 23.9	4								
24.0 - 25.9	4					3			3
26.0 - 27.9	┼───└───	ļ				<u> </u>			
28.0 - 29.9	<u> </u>		<u> </u>		<u>                                      </u>	<u> </u>		2	3
30.0 - 31.9	2					<u>}</u>	2	<u> </u>	4
32.0 - 33.9	<u> </u>	2			<u> </u>	<u> </u>	<u>├</u>	i	
36.0 - 37.9	3	<u> </u>				<u></u>	· · · · ·	2	
38.0 - 39.9						<u></u> ↓ 	3		3
			<b>.</b>	<b>↓</b>	<b>.</b>	. <b>I</b>	ļ	<b></b>	
40.0 - 44.9	3	1		1	2		2	1	3
45.0 - 49.9	1		1		1			1	1
50.0 - 54.9	1	<u> </u>			ļ	ļ			
55.0 - 59.9	<u> </u>	<u> </u>			ļ	<u> </u>		ļ	
60.0 - 64.9			ļ			Ļ	1	<u> </u>	<u> </u>
65.0 - 69.9	<u> </u>	<u> </u>				<u> </u>		1	
75.0 - 79.9		<u> </u>		<u> </u>					· · · · ·
80.0 - 84.9			}	<u> </u>					
85.0 - 89.9					t	1		1	
90.0 - 94.9		1		1	<u> </u>				
95.0 - 99.9								1	
100.0 - +									
	ļ			ļ	ļ		ļ		
Others not meas.	ļ	ļ	ļ			<u> </u>	· · · ·	l	а Ка
Total unmeasured	ļ	l	<u> </u>	<u> </u>	<u> </u>	<u> </u>			A. Carrier
Connel Total	30	3	2		6	8	17	7	32
Grand IOtal	30	3	2		<u>ь</u>	8	1/	<u>                                     </u>	32
	+	+		<u> </u>	<u> </u>	+	+	+	
<u></u>	+	1		+	<u> </u>		<u> </u>		+
h	1	1	1	†	1	+		<u> </u>	†
						1	1	1	
terrester and the second se							1		

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 8 of 16)

Total Length in Centimeters	Bigmouth buffalo	Bigmouth buffalo	Bigmouth buffalo	Bigmouth buffalo	Redhorse spp.	Silver redhorse	Silver redhorse	Silver redhorse	Silver redhorse
	Spring	Summer	Fall	Total	Summer*	Spring	Summer	Fall	Total
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9						L			
4.0 - 5.9									
6.0 - 7.9								ļ	
8.0 - 9.9					1	<u> </u>			
10.0 - 11.9				ļ			ļ		
12.0 - 13.9			ļ	ļ		ļ	ļ	ļ	ļ
14.0 - 15.9			ļ	L	ļ		ļ	<b></b>	ļ
16.0 - 17.9		ļ				<b>_</b>	<b>_</b>	ļ	
18.0 - 19.9					·····	<u>}</u>		<u> </u>	
20.0 - 21.9						<u> </u>	ļ	ļ	
22.0 - 23.9							<u> </u>		
24.0 - 25.9	ļ								
26.0 - 27.9		<u> </u>	<u> </u>		+		+		
28.0 - 29.9				9			<u> </u>	· · · ·	
30.0 - 31.9	<u>                                      </u>	ļ	7						
32.0 - 33.9		2		3		<u> </u>	<u> </u>		7
34.0 - 35.9		<u>                                      </u>	<u> </u>	2	<u> </u>		<u>                                      </u>		<u>                                      </u>
36.0 - 37.9		<u>                                     </u>	<u> </u>	2					
38.0 - 39.9		ļ		↓	l	Ļ	ļ	ļ	L
40.0 - 44.9	<u> </u>	1	1 ,	1 1	1	1	1	1	1
45.0 - 49.9	t		<u> </u>	<u>+</u>	+	+			
50.0 - 54.9				+		1		<u> </u>	
55.0 - 59.9		1 ,		1		1 7		1 1	2
60.0 - 64.9	1		1	<u> </u>		1	1	<u> </u>	<u> </u>
65.0 - 69.9		1	1 1	1 1					
70.0 - 74.9	1		<u>+</u>	1	1				
75.0 - 79.9									
80.0 - 84.9			1						
85.0 - 89.9						$\sim$			
90.0 - 94.9	1			1					
95.0 - 99.9									
100.0 - +									
Others not meas.	ļ								
Total unmeasured		<u></u>			Į				
Total measured	1	5	6	12	1	1	1	1	3
Grand Total	1	5	6	12	1	1	1	1	3
	<b></b>	·				<u> </u>			<u>  </u>
	<u> </u>			<u> </u>		+			+
h		+				+			+
	<u> </u>							. <u> </u>	<u> </u>
						1	<u> </u>		<u></u>

\* Caught during one season only.

Total Length in Centimeters	Shorthead redhorse	Shorthead redhorse	Shorthead redhorse	Shorthead redhorse	Channel catfish	Channel catfish	Channel catfish	Channel catfish	Flathead catfish
	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total	Spring
Y/Y not meas.									
						1			
0.1 - 1.9						1			
2.0 - 3.9									
4.0 - 5.9									
6.0 - 7.9									
8.0 - 9.9		5		5			1	1	
10.0 - 11.9		2	2	4		· · · · · · · · · · · · · · · · · · ·			
12.0 - 13.9			1	1			1	<u> </u>	
14.0 - 15.9					1			1	
16.0 - 17.9		1		1					
18.0 - 19.9			2	2			1	1	
20.0 - 21.9		2	<u> </u>	3	1			1	
22.0 - 23.9			2	2				ļ	
24.0 - 25.9			1	2				· · · · · · · · · · · · · · · · · · ·	
26.0 - 27.9		2	<u> </u>	3		+			
28.0 - 29.9		l							
30.0 - 31.9	2			3		<u> </u>			
32.0 - 33.9	<u> </u>			3		· · · · · · · · · · · · · · · · · · ·	}		
34.0 - 35.9	10		3	4					
28 0 - 39 9		9	2	16		2	<u> </u>	2	
30.0 - 55.5	4	9		10	ļ	<u> </u>	<b>!</b>	<u> </u>	the second s
40.0 - 44.9	8	14	10	32	2	2	3	7	1
45.0 - 49.9	3	3		6	2	3	1	6	
50.0 - 54.9			1	1	1	3	1	5	
55.0 - 59.9					1	3		4	
60.0 - 64.9					1		1	2	
65.0 - 69.9									
70.0 - 74.9							ļ		
75.0 - 79.9			ļ		ļ		ļ	L	
80.0 - 84.9		·							
85.0 89.9		ļ			ļ		ļ	ļ	in e
90.0 - 94.9			ļ		ļ				
95.0 - 99.9		<u> </u>			<u> </u>	+		<u> </u>	
100.0 - +								·	
Others not meas.							· · · · ·		
Total unmeasured		ļ		ļ				<b>_</b>	
Total measured	29	50	31	110	11	16	9	36	2
Grand Total	29	50	31	110	11	16	9	36	2
				<u> </u>	<u> </u>			·	
<b> </b>		<u> </u>	+	<u> </u>	<u> </u>		<u> </u>		
<b></b>	<b> </b>	<b> </b>	+		<u> </u>	+	+	+	
	<b> </b>		+		+			+	+

Table 2.4-12.	Length-frequencies of all fish caught by electrofishing in the Mississippi River and
	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota.
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 9 of 16)

2.4-95

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 10 of 16)

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·		r			r		<u>1</u>	7	r
	Flathead	Flathead	Flathead	White	White	White	White	Rock	Rock
Total Length	catfish	catfish	catfish	bass	bass	bass	bass	bass	bass
in Centimeters	catitish	Caciton	cattrish	buss					
								_	
	Summer	Fall	Total	Spring	Summer	Fall	Total	Spring	Summer
							+		
							ļ		
Y/Y not meas.							1		
0.1 - 1.9							1		
20 - 39	1	1		2			3	+	
2.0 - 5.9				<u> </u>		+	1 1	+	+
4.0 - 5.9				6	ļ				
6.0 - 7.9							<b></b>	2	
8.0 - 9.9					17		17		1
10.0 - 11.9					28	8	36	1	2
12.0 - 13.9					8	27	35	3	2
14.0 - 15.9	1			9	<u>_</u>	5	14	1	4
16.0 - 17.9		†		11	2	+	12	Λ	7
	†	<u> </u>		<u>├</u>	<u>+</u>		17	<u>+</u>	<u>+'</u> -
18.0 - 19.9	<u> </u>	+				- <u>-</u>			<u> </u>
20.0 - 21.9	<b> </b>	<u> </u>	ļ	ļ	15	5	20	ļ	1
22.0 - 23.9		Ļ		5	10	10	25		1
24.0 - 25.9				3	33	9	45		
26.0 - 27.9					23	20	43		
28.0 - 29.9		1			11	15	26		
30.0 - 31.9	1		1	,			7		1
22.0 22.0		1		<u> </u>	4	+	1 75	1	1
32.0 - 35.9	+			ļl	<u>                                     </u>	3		+	+
34.0 - 35.9	<u> </u>	<u> </u>		<u> </u>	4	3	8	+	<u> </u>
36.0 - 37.9	<b> </b>	l			6	5	<u> </u>	ļ	
38.0 - 39.9	ļ		L	2	1	5	8		L
							-		- <b>i</b>
40.0 - 44.9		1	2	1		2	3	1	
45.0 - 49.9	1	1	2						
50.0 - 54.9		1 1	1			1	1	1	1
55.0 - 59.9	1	1 1	1 1		1		1		1
60.0 64.0	1		ļ	<u>†</u>				1	1
65.0 - 69.9	<u> </u>				<u> </u>		+		+
70.0 7/ 0	+	+	1		+	-+			
/0.0 - /4.9		+			<u> </u>		+		
75.0 - 79.9	<u> </u>								
80.0 - 84.9	ļ	1	1		<u> </u>		ļ	1	1
85.0 - 89.9									
90.0 - 94.9					1	1			
95.0 - 99.9	1		1		1	1	1		
100 0 - +	1	+	†	+	1		1	+	+
	1	+	<del> </del>	+	+	+	+	+	+
	+	<u> </u>	<del> </del>		+		1 1	+	+
utners not meas,	<u> </u>		<b> </b>		<u> </u>			+	
Total unmeasured	l	+	ļ		<b> </b>				
Total measured	1	5	8	38	184	125	347	10	18
Grand Total	1	5	8	39	184	125	348	10	18
						1			1
	1		<u> </u>	1	1	1	1	1	+
<b> </b>	1	1	1	1	1		1	-	
	†		+		+		+		+
	1			1	L		<u> </u>	+	+

2.4-96

Table 2.4-12.	Length-frequencies of all fish caught by electrofishing in the Mississippi River and
	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota,
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 11 of 16)

	Rock	Rock	Hybrid	Hybrid	Hybrid	Hybrid	Green	Green	Green
Total Length	bass	bass	sunfish	sunfish	sunfish	sunfish	sunfish	sunfish	sunfish
in Centimeters									
	Fall	Total	Spring	Summer	Fall	Total	Spring	Summer	Fall
Y/Y not meas.									
0.1 - 1.9							1		
2.0 - 3.9									
4.0 - 5.9	7	7						2	
6.0 - 7.9		2						1	
8.0 - 9.9	4	5	1			1	3	5	6
10.0 - 11.9	6	9		1	3	4	5	9	8
12.0 - 13.9	4	9	1	2	13	16		2	6
14.0 - 15.9	8	12		2	7	9	3	2	1
16.0 - 17.9	5	16		1		1			
18.0 - 19.9	 	1							
20.0 - 21.9		1							
22.0 - 23.9							+		
24.0 - 25.9						+	<u> </u>	<u> </u>	
28.0 - 27.9				·····					
20.0 - 29.9							+	· · ·	
30.0 - 31.9									
32.0 - 33.9						<u> </u>			
34.0 - 37.9									
38.0 - 39.9									
		łł	· · · · · · · · · · · · · · · · · · ·	ļ	4			<b>+</b>	1
40.0 - 44.9					1		1		
45.0 - 49.9									
50.0 - 54.9									
55.0 - 59.9								ļ	
60.0 - 64.9								ļ	
65.0 - 69.9								<u> </u>	
70.0 - 74.9									· · · · · · · · · · · · · · · · · · ·
75.0 - 79.9					<u> </u>				
80.0 - 84.9									
85.0 - 89.9	· .								
90.0 - 94.9					<u> </u>	+	+		
100 0 - +							+		
		+			1	1	1	1	
Others not meas	1	<b>†</b>			1		·	1	
Total unmeasured		1			1	1 .	1	1	1
Total measured	35	63	2	6	23	31	12	21	21
Grand Total	35	63	2	6	23	31	12	21	21
				ļ					
L					<u> </u>		10	ļ	L
		ļ	l	ļ	ļ				
	<b> </b>				<u> </u>				<u> </u>
	l			· · · · · · · · · · · · · · · · · · ·					1

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 12 of 16)

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Total Length in Centimeters	Green sunfish Total	Orange – spotted sunfish Fall*	Bluegill Spring	Bluegill Summer	Bluegill Fall	Bluegill Total	Smallmout bass Spring	ISmallmouth bass Summer	Smallmouth bass Fall
		1		[	T	1	1		
V/V not meas		+		t	1	1	1		
1/1 not medo.		+				1	+		
0.1 1.0		+	+	<u> </u>	+	+		<b>}</b>	
0.1 - 1.7		+				+	+		<b> </b>
2.0 - 3.9					9	30		<b> </b>	<b> </b>
4.0 - 5.9	2		ļ	19	43	62	_	ļ	
6.0 - 7.9	1		5	3	13	21		2	ļ
8.0 - 9.9	14		16	16	16	48	_	4	1
10.0 - 11.9	22			68	79	148	5	1	1
12.0 - 13.9	9		12	35	81	128	13	8	2
14.0 - 15.9	6		17	39	62	118	3	13	1
16.0 - 17.9			17	43	46	106	3	9	2
18.0 - 19.9			10	8	10	28	7	10	3
20.0 - 21.9	· · · · ·		1	3	1	4	6	1 11	7
22.0 - 23.9		1	<u>+</u>				1 11	5	8
24.0 - 25.9		1	-		1		3	7	12
26.0 - 27.9			1 1	1		1 1	1 1	4	8
28.0 - 29.9	<u></u>				+	+		Δ	2
20.0 - 27.7	<u>}</u>		+	1	+	+	- <del> </del>	+	3
30.0 - 31.9				+	+			+	+
32.0 - 33.9	<u>}</u>			<u> </u>		+		+	<u> </u>
34.0 - 35.9					+	<u> </u>	_ <u>_</u>	+	<u> </u>
36.0 - 37.9	<u> </u>					+		+	<u>      </u>
38.0 - 39.9	Į							2	1
	ļ		-1		1				+
40.0 - 44.9							1	1	3
45.0 - 49.9	L								
50.0 - 54.9	L								1
55.0 - 59.9									
60.0 - 64.9						1			
65.0 - 69.9									
70.0 - 74.9									
75.0 - 79.9									
80.0 - 84.9								1	
85.0 - 89.9				1					1
90.0 - 94.9		1		1				1	1
95.0 - 99.9	1	-		1	1	1		1	1
100.0 - +	1			1	1		-	1	11
		-						1	
	1	1 7	+	1	1	1		1	+
uthers not meas.			-						+
Hotal unmeasured					250	604	61	02	56
Hotal measured	54	-	80	255	250	60F	61	82	56
Grand Total	54		80	250	359	640		02	50
	+			+	+				+
				+					+
	<u></u>	-	_		1			<u> </u>	1

Table 2.4-12.	Length-frequencies of all fish caught by electrofishing in the Mississippi River and
	connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota,
	1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 13 of 16)

Total Length in Centimeters	Smallmouth bass	Largemouth bass	Largemout bass	h Large Mouth bass	White crappie	White crappie	White crappie	Black crappie	Black crappie
	Total	Summer	Fall	Total	Summer	Fall	Total	Spring	Summer
Y/Y not meas.									
0.1 - 1.9					ļ	1			
2.0 - 3.9					ļ	ļ	ļ		
4.0 - 5.9					ļ				
6.0 - 7.9	2						ļ		2
8.0 - 9.9	5					1	1		
10.0 - 11.9	/							3	
12.0 - 13.9	23					<u> </u>		5	
14.0 - 15.9		1		]					4
10.0 - 17.9	14					6	6		2
18.0 - 19.9	20		1	1	+	2	2	+	2
20.0 - 21.9	24	3		3	<u>                                      </u>	6	<u> </u>	<u> </u>	4
22.0 - 25.9	22		2 E	<u> </u>	3	4	<u> </u>	<u> </u>	1
26.0 - 27.9	13		5			2	2	1	<u> </u>
28.0 - 29.9	10		1	1	1	1	1	<u>.</u>	
30.0 - 31.9	10	1		1	1	1	1		<u> </u>
32.0 - 33.9	2	1		1 1		1	1	1	
34.0 - 35.9	1			· · · · ·	1		1	1	
36.0 - 37.9	2	<u></u>							
38.0 - 39.9	3		1	1					
		4	•	••••••••••••••••••••••••••••••••••••••		*	•		
40.0 - 44.9	5								
45.0 - 49.9					ļ		ļ	<u> </u>	
50.0 - 54.9	1			<u> </u>				L	
55.0 - 59.9									
60.0 - 64.9									
65.0 - 69.9	<u> </u>						+		
70.0 - 74.9					·		+		
75.0 - 79.9	}					+	+	+	
85.0 - 89.9	· ·						+		
90.0 - 94.9					<u> </u>			+	
95.0 - 99.9	<u> </u>							1	+
100.0 - +		1		<u> </u>					
<u></u>		· ·	1		1	1	-	1	
Others not meas.	1	1				-			
Total unmeasured									
Total measured	199	6	10	16	5	27	32	9	18
Grand Total	199	6	10	16	5	27	32	9	18
		ļ			ļ			-	
			; ;	1					
		<b> </b>			<b>_</b>		+		
			· · · · ·	· · · · · · · · · · · · · · · · · · ·					
L	<u> </u>			1	1		1		

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 14 of 16)

	1	-T	γ	1			- <u>r</u>	1	1
	Black	Black	Johnny	Yellow	Yellow	Yellow	Yellow	Log	Log
Total Length	crappie	crappie	darter	perch	perch	perch	perch	perch	perch
in Centimeters									
	Fall	Total	Summer*	Spring	Summer	Fall	Total	Spring	Summer
					+			+	
Y/Y not meas.				+					
	· · · · · · · · · · · · · · · · · · ·								
0.1 - 1.9			1	1	1		-		
2.0 - 3.9			1			-			
4.0 - 5.9	1	1 1		3	1		3		
6.0 - 7.9	1	3		1	2	-	2		1
8.0 - 9.9					17	1	18		6
10.0 - 11.9	1	4				2	2		
12.0 - 13.9	5	11		3			3		
14.0 - 15.9	11	15		3	1		4		
16.0 - 17.9	5	7							
18.0 - 19.9	2	4							
20.0 - 21.9	6	10			1		1		
22.0 - 23.9	9	12							
24.0 - 25.9	5	6			_				
26.0 - 27.9	<b>_</b>								
28.0 - 29.9									
30.0 - 31.9	<u> </u>	_							
32.0 - 33.9									
34.0 - 35.9			-		_				
36.0 - 37.9									
38.0 - 39.9									
40.0 - 44.9		1	1	1	1	1			
45.0 - 49.9				+					
50.0 - 54.9				1					
55.0 - 59.9									
60.0 - 64.9					_				
65.0 - 69.9									
70.0 - 74.9									
75.0 - 79.9									
80.0 - 84.9									
85.0 - 89.9				_	_				
90.0 - 94.9									
95.0 - 99.9					_				
100.0 - +	<b>_</b>								
ļ				+					
Others not meas.			1					2	7
Total unmeasured			1					2	7
Total measured	46	73		9	21	3	33		/
Grand Total	46	73		9	21	3	33	2	14
	+								
	+								
	1				_				

## Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 15 of 16)

Total Length in Centimeters	Log perch	Log perch	Sauger	Sauger	Sauger	Sauger	Walleye	Walleye	Walleye
	Fall	Total	Spring	Summer	Fall	Total	Spring	Summer	Fall
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9									
4.0 - 5.9			2		1	3	1		
6.0 - 7.9		]	7			7	1		
8.0 - 9.9		6							
10.0 - 11.9				15	1			1	
12.0 - 13.9				20	7			4	1
14.0 - 15.9				1	7	8		1	2
16.0 - 17.9				2	3	5		<u>  1</u>	
18.0 - 19.9			3			3	5		
20.0 - 21.9		ļ	9		1	10	7		1
22.0 - 23.9			66			7	2	1	
24.0 - 25.9			8	6				<u> </u>	2
26.0 - 27.9			.6	77	8	21			
28.0 - 29.9				7	1	8	2	ļ	1
30.0 - 31.9					2	2		<u>                                     </u>	2
32.0 - 33.9			1			1		<u> </u>	1
34.0 - 35.9				2		2		2	1
36.0 - 37.9			1	- 1		2		<u> </u>	
38.0 - 39.9				1		L_1	L		
40.0 44.0		1	1		1	I	1	1	<u> </u>
40.0 - 44.9		+			3	3			3
43.0 - 49.9	<u> </u>			· · · · · · · · · · · · · · · · · · ·				<u>                                     </u>	5
55.0 - 59.9	1						<u>├</u>		31
60.0 64.0							·	1	5
65.0 - 69.9									
70.0 - 74.9		1				1			
75.0 - 79.9		1							
80.0 - 84.9	1	1			1	<u>†</u>	1	1	
85.0 - 89.9							1		
90.0 - 94.9	1						1	1	
95.0 - 99.9									
100.0 - +									
Others not meas.	1	10					•		
Total unmeasured	1	10							
Total measured			43	62	36	141	20	14	29
Grand Total	1	17	43	62	36	141	20	14	29
		<b>_</b>					ļ		ļ
L	<u> </u>			ļ	L	ļ		ļ	ļ
	ļ								<u> </u>
			ļ						ļ
<u> </u>				1	<b></b>				

Table 2.4-12. Length-frequencies of all fish caught by electrofishing in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 16 of 16)

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·	and the second	Y				an a			<u> </u>
	Walleye	Freshwater	Freshwater	Freshwater	Freshwate	r			·
Total Length		drum	drum	drum	drum				
in Centimeters									
	Tatal	Contine	Summon	5-11	Total				
	IOTAI	spring	Summer	Γαιι	10041				
V/V pot mono		+							
1/1 not meas.			90		90				
0.1 - 1.9		<u> </u>							
2.0 - 3.9			1		1				
4.0 - 5.9	1								
6.0 - 7.9	1								
80.00	·	1	20	2	22				
10.0 - 3.3		<u> </u>	115		126				
10.0 - 11.9		4	115	/	120				
12.0 - 13.9	5	43	112	28	183				
14.0 - 15.9	3	108	10	7	125	L	ļ		
16.0 - 17.9	<u> </u>	29	36	3	68	·	ļ		l
18.0 - 19.9	5	7	55	4	66				
20.0 - 21.9	8	14	9	1	24				
22.0 - 23.9	3	12	4	1	17				
24.0 - 25.9	3	4	2	1	7				
26.0 - 27.9	,	3		2	5		1		
28.0 - 29.9	3	<u> </u>		3	5				
20.0 - 29.9		<u> </u>	<u> </u>	5	10	<u> </u>		·	
30.0 - 31.9	3	3	<u> </u>	6	10				
32.0 - 33.9	2	2	9	44	15		<u> </u>		
34.0 - 35.9	3		2	2	4				
36.0 - 37.9		1	11	1	3	L			
38.0 - 39.9		2	2	5	9				
40.0 - 44.9	3	1	2	2	5				
45.0 - 49.9	7	1	1	1	2			1	
50.0 - 54.9	·			<u> </u>	<u> </u>				
50.0 - 54.5	4					<u> </u>			<u> </u>
55.0 - 59.9	<u> </u>		ł		<u> </u>			ļ	
60.0 - 64.9	5		<b></b>	<b> </b>			·		ll
65.0 - 69.9			<b> </b>		l	<b> </b>	l		
70.0 - 74.9		4	<u> </u>					· · · · · · · · · · · · · · · · · · ·	
75.0 - 79.9			ļ				L		
80.0 - 84.9									
85.0 - 89.9									
90.0 - 94.9		1				1	1		
95.0 - 99.9		1	1	1	1	1	1		
100.0 - +	1	1	†	1	<u> </u>	t	1	<u> </u>	
100.0		+	1		<u> </u>	†	+	<u> </u>	+
	<u> </u>	+		<u> </u>	1.00	<u> </u>			<u> </u>
Others not meas.		+ 111	51	<u> </u>	162	┨━━━━━	+	<u> </u>	+
- Total unmeasured	·	<u> </u>	141	<u> </u>	252	+		<u> </u>	
Total measured	63	235	382	80	697		ļ	ļ	ļ
Grand Total	63	346	523	80	949	ļ	ļ	ļ	<u> </u>
						<u> </u>			
			:						
	T			1	1	1		1	1
<b> </b>	1	-	1	1	1	1	1	1	1
			1	1		1	+	+	1
L	<u>t</u>	+		<u> </u>	t	1	1	<u> </u>	+

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Spacias		Above Plant	Plant Area	(from plant intake to Lock and Dam 3)
Shectes	No.	No./hour (for 0.500 h)	No.	No./hour (for 0.500 h)
Gizzard shad Carp	9 0	18.00 0	1 2	2.00 4.00
Quillback carpsucker	0	0	2	4.00
Smallmouth buffalo	1	2.00	0	0
Bigmouth buffalo	1	2.00	1	2.00
Shorthead redhorse	0	0	1	2.00
Channel catfish	0	0	1	2.00
White bass	5	10.00	. 8	16.00
White crappie	5	10.00	4	8.00
Black crappie	12	24.00	2	4.00
Walleye	0	0	2	4.00
Freshwater drum	4	8.00	8	16.00
Total	37	74.00	32	64.00

Table 2.4-13 Summary of trawling catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring 1978.

Species		Above Plant	<u>Plant Area</u>	(from plant intake to Lock and Dam 3)		
	No.	No./hour (for 0.500 h)	No.	No./hour (for 0.500 h)		
Shortnose gar Gizzard shad Carp Emerald shiner Spottail shiner	2 3 0 1 1	4.00 6.00 0 2.00 2.00	0 0 2 0 0	0 0 4.00 0 0		
Quillback carpsucker	0	0	4	8.00		
Smallmouth buffalo Channel catfish White bass Bluegill White crappie Black crappie Freshwater drum	2 0 10 79 45 <b>36</b>	4.00 0 4.00 20.00 158.00 90.00 72,00	4 2 0 0 0 0 27	8.00 4.00 0 0 0 54.00		
Total	181	362.00	39	78.00		

Table 2.4-14 Summary of trawling catches from the Mississippi River and connecting waters near Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, summer 1978.

Species	/	Above Plant	Plant Area	(from plant intake to Lock and Dam 3)		
	No.	No./hour (for 0.500 h)	No.	No./hour (for 0.500 h)		
Bowfin	1	2.00	0	0		
Gizzard shad	4	8.00	26	52.00		
Carp	2	4.00	1	2.00		
Spottail shiner	6	12.00	1	2.00		
Bigmouth buffalo	2	4.00	2	4.00		
Yellow bullhead	1	2.00	0	0		
Bluegill	23	46.00	0	0		
White crappie	27	54.00	Ō	0		
Black crappie	24	48.00	1	2.00		
Sauger	0	0	1	2.00		
Freshwater drum	13	26.00	3	6.00		
Total	103	206.00	35	70.00		

Table 2.4-15 Summary of trawling catches from the Mississippi River and connecting waters near Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, fall 1978. Table 2.4-16. Length-frequencies of all fish caught by trawling in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0 and 3 combined, seasons separated. (Sheet 1 of 6)

Total Length in Centimeters	Shortnose gar	Bowfin	Gizzard shad	Gizzard shad	Gizzard shad	Gizzard shad	Carp	Carp	Carp
	Summer*	Fall*	Spring	Summer	Fall	Total	Spring	Summer	Fall
			-	+	_				
Y/Y not meas.			-				+		
0.1 - 1.9			+	+			+		
0.1 - 1.9							+	· <del> </del>	
2.0 - 3.9			<u>+</u>	+	1			+	
6.0 - 7.9					-		+	+	
8.0 - 9.9					+	2	+		
10.0 - 11.9			1	<u>+</u>	2		+		
12.0 - 13.9			-	1	2	3	1		
14.0 - 15.9					11	11			
16.0 - 17.9					8	8			
18.0 - 19.9	ļ				4	4			
20.0 - 21.9	ļ	ļ					1		
22.0 - 23.9									
24.0 - 25.9							+		
26.0 - 27.9		+					+		
28.0 - 29.9	+						+		+
32.0 - 33.9		+			+				
34.0 - 35.9	+	<u> </u>	····						-
36.0 - 37.9			-		-				+
38.0 - 39.9					1	1			
40.0 - 44.9									
45.0 - 49.9		1				_		_	2
50.0 - 54.9								2	
55.0 - 59.9								-	
60.0 - 64.9	2						+ 1		
70.0 - 74.9		1					+		
75.0 - 79.9	1								
80.0 - 84.9	1	1	-		1		+		
85.0 - 89.9	·								
90.0 - 94.9									
95.0 - 99.9									
100.0 - +		<b> </b>							
	l								
Others not meas.									
Total not meas.							+		
+ Total measured	2		10		30	43	2	2	3
	1			3		43			
				:		**************************************			
	<u> </u>						_		

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Table 2.4-16.	Length-frequencies of all fish caught by trawling in the Mississippi River and connecting
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.
	Sections 0 and 3 combined, seasons separated. (Sheet 2 of 6)

Total Length in Centimeters	Carp	Emerald shiner	Spottail shiner	Spottail shiner	Spottail shiner	Quillback carp- sucker	Quillback carp- sucker	Quillback carp- sucker	Small- mouth buffalo
	Total	Summer*	Summer	Fall	Total	Spring	Summer	Total	Spring
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9									
4.0 - 5.9		1							
6.0 - 7.9		······································	1		1				
8.0 - 9.9			· · · · · · · · · · · · · · · · · · ·						
10.0 - 11.9									
12.0 - 13.9									
14.0 - 15.9									
16.0 - 17.9									
18.0 - 19.9									
20.0 - 21.9	J								
22.0 - 23.9									1
24.0 - 25.9							1	11	
26.0 - 27.9									
28.0 - 29.9								· .	
30.0 - 31.9	1								
32.0 - 33.9									
34.0 - 35.9							1	1	
36.0 - 37.9	·····						1	1	
38.0 - 39.9			L	L			ļ		
			1	I	t	I	<u></u>	· · · · · · · · · · · · · · · · · · ·	
40.0 - 44.9							1		
45.0 - 49.9	2					2		2	
50.0 - 54.9	2								
55.0 - 59.9									
60.0 - 64.9	1								
70.0 74.0			<u> </u>				<u></u>		
70.0 = 74.9			<u> </u>						
80.0 - 84.9			-	· · · · ·		<u>}</u>	<u>+</u> -		
85.0 - 89.9			-				+		
90.0 - 94.9			<u> </u>				<u> </u>		
95.0 - 99.9									· · · · · · · · · · · · · · · · · · ·
100.0 - +			+						
†		· · · · ·	1			<u> </u>	1	1	
Others not meas.			1	7	7	<u>, , , , , , , , , , , , , , , , , , , </u>			
Total unmeasured			1	7	7	1	1		
Total measured	7	1	1	[	i î	2	4	6	1
Grand Total	7	1	1	7	8	2	4	6	1

Table 2.4-16. Length-frequencies of all fish caught by trawling in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0 and 3 combined, seasons separated. (Sheet 3 of 6)

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Total Length in Centimeters	Smallmouth buffalo	Smallmouth buffalo	Bigmouth buffalo	Bigmouth buffalo	Bigmouth buffalo	Shorthead redhorse	Yellow bullhead	Channel catfish	Channel catfish
	Summer	Total	Spring	Fall	Total	Spring*	Fall*	Spring	Summer
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9								1	
4.0 - 5.9									1
6.0 - 7.9									
8.0 - 9.9	2	2							
10.0 - 11.9									
12.0 - 13.9									
14.0 - 15.9								ļ	
16.0 - 17.9	· · · · · ·			ļ	ļ				
18.0 - 19.9									
20.0 - 21.9				ļ				ļ	4
22.0 - 23.9		1						<u> </u>	
24.0 - 25.9	<u> </u>			<u></u>					
26.0 - 27.9				<u> </u>		+		<u> </u>	+
28.0 - 29.9								· · · · · · · · · · · · · · · · · · ·	
30.0 - 31.9	1	1	1	<u>                                      </u>	2				
32.0 - 33.9				<u> </u>				ļ	
34.0 - 35.9				2	2	ļ	1	ļ	
36.0 - 37.9	<b> </b>			1	1			<u> </u>	
38.0 - 39.9	1	11		ļ		1			
40.0 - 44.9	1	1		1	1	1		1	1
45.0 - 49.9				1				1	
50.0 - 54.9	1	1		1					
55.0 - 59.9									
60.0 - 64.9									
65.0 - 69.9									
70.0 - 74.9								<u> </u>	
75.0 - 79.9			1	<u> </u>	1				
80.0 - 84.9									
85.0 - 89.9	<u> </u>			ļ					
90.0 - 94.9	ļ					<u> </u>			
95.0 - 99.9		<u></u>	ļ	ļ			ļ	<u> </u>	4
100.0 - +		<b> </b>		ļ		<b>.</b>		ļ	
	<u> </u>	<b>_</b>			<u> </u>				
Others not meas.	<u> </u>			<u> </u>			· · ·		+
lotal unmeasured	<u> </u>	ļ		ļ	+	<u> </u>	<u> </u>	<u> </u>	1
iocal measured	66	7	22	4	6	+ 1	1	<u>  1</u>	+ <u></u>
Grand Total	6	77	2	4	6		1	<u>                                       </u>	2
		+					<u> </u>		
	<u> </u>	+	;		+				
						<u> </u>		+	
		+	<u> </u>		+	+	+	+	
	<u> </u>	<u> </u>	L	<u></u>		+	<u> </u>		1

Table 2.4 <b>-</b> 16.	Length-frequencies of all fish caught by trawling in the Mississippi River and connecting
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.
	Sections 0 and 3 combined, seasons separated. (Sheet 4 of 6)

Total Length in Centimeters	Channel catfish	White bass	White bass	White bass	Bluegill	Bluegill	Bluegill	White crappie	White crappie
	Total	Spring	Summer	Total	Summer	Fall	Total	Spring	Summer
Y/Y not meas.									33
						1			
0.1 - 1.9					2		2		1
2.0 - 3.9	1				5		5		7
4.0 - 5.9	1								30
6.0 - 7.9						<u> </u>			1
8.0 - 9.9					1		1		
10.0 - 11.9						1			
12.0 - 13.9						1	1	1	
14.0 - 15.9		·····			2	3	5	2	2
16.0 - 17.9		1		1		9	9		3
18.0 - 19.9		1	] /	2		8	8		
20.0 - 21.9	÷					2	2		
22.0 - 23.9		2		2				4	2
24.0 - 25.9		5	1	6					
26.0 - 27.9		2		2				1	
28.0 - 29.9	1	1		1				1	
30.0 - 31.9						1			
32.0 - 33.9									
34.0 - 35.9		1		1				1	
36.0 - 37.9					······	1	<u>}</u>	1	
38.0 - 39.9				······································					
		1	· · · · · · · · · · · · · · · · · · ·				<b>.</b>	÷	<b>I</b>
40.0 - 44.9									
45.0 - 49.9									
50.0 - 54.9									
55.0 - 59.9									
60.0 - 64.9									
65.0 - 69.9									
70.0 - 74.9									·
75.0 - 79.9									
80.0 - 84.9									
85.0 - 89.9									
90.0 - 94.9	ļ	ļ							
95.0 - 99.9								L	
100.0 - +		L							
		<u></u>						Ļ	
Others not meas.		<b>_</b>					·	<u> </u>	
Total unmeasured	ļ	<b></b>		·				ļ	33
Total measured	3	13	2	15	10	23	33	9	46
Grand Total	3	13	2	15	10	23	33	9	/9
	<b> </b>	<b> </b>						ļ	Į
<b></b>	ļ	ļ	ļ				<b>_</b>		
	<b> </b>		<b> </b>					·	
	ļ	ļ	<b> </b>		<b> </b>	-	ļ		
	ļ	1	ļ						

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Table 2.4-16. Length-frequencies of all fish caught by trawling in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0 and 3 combined, seasons separated. (Sheet 5 of 6)

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Total Length in Centimeters	White crappie	White crappie	Black crappie	Black crappie	Black crappie	Black crappie	Sauger	Walleye	Freshwater drum
	Fall	Total	Spring	Summer	Fall	Total	Fall*	Spring*	Spring
Y/Y not meas.		33							
					ļ	L			
0.1 - 1.9		1			ļ				
2.0 - 3.9		7			ļ				1_1
4.0 - 5.9		30		1	L	1			1
6.0 - 7.9	3	4		2		2			
8.0 - 9.9	4	4	1		1	2			
10.0 - 11.9			7	2		9			<u></u>
12.0 - 13.9		11	2	30	6	38			<u> </u>
14.0 - 15.9		4		4	16	20			1
16.0 - 17.9	7	10			ļ		+		<u> </u>
18.0 - 19.9			1	1	ļ	2			
20.0 - 21.9	1	1	2	4	1	7			3
22.0 - 23.9	4	10	1	1	<u> </u>	3	- <u> </u>		3
24.0 - 25.9	4	4					+		
26.0 - 27.9	2	3			+		+		
28.0 - 29.9	2	3			<u> </u>		+		
30.0 - 31.9							+	<u> </u>	
32.0 - 33.9		· · · · · · · · · · · · · · · · · · ·		<u> </u>				-+	
34.0 - 35.9		<u> </u>							+
36.0 - 37.9		<u> </u>		<u> </u>		+	+		+
38.0 - 39.9		L	<u> </u>						
40.0 44.0	<u> </u>		1	1	1	Υ	·	1	
40.0 - 44.9		<u> </u>					+		
50.0 - 54.9						+			
55.0 - 59.9									
60.0 - 64.9				1	1	1			11
65.0 - 69.9				1 .	1				+1
70.0 - 74.9		1							
75.0 - 79.9					1				1
80.0 - 84.9	1		. ·		1.	1	1		
85.0 - 89.9					1		1		
90.0 - 94.9					1	1	1		
95.0 - 99.9									
100.0 - +									
Others not meas.		l		ļ					
Total unmeasured		33	ļ	1					
Total measured	27	82	14	45	25	84	1	2	12
Grand Total	27	115	14	45	25	84	1	2	12
	ļ	·		ļ			- <b> </b>		
		<b>_</b>	1						4
L	<b> </b>	ļ			4				
	ļ	<b> </b>		ļ					
	ļ		<u> </u>	<u> </u>	1		1		_

Table 2.4-16.	Length-frequencies of all fish caught by trawling in the Mississippi River and connecting
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.
	Sections 0 and 3 combined, seasons separated. (Sheet 6 of 6)

Total Length in Centimeters	Freshwater drum	Freshwater drum	Freshwater drum						
	Summer	Fall	Total						
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9		1	2						
4.0 - 5.9		3	4						
6.0 - 7.9	5		5						
8.0 - 9.9	4	2	6						
10.0 - 11.9	5	1	6						
12.0 - 13.9		5	5				-		
14.0 - 15.9		4	5						
16.0 - 17.9	10		11						
18.0 - 19.9	10		11						
20.0 - 21.9	12		15						
22.0 - 23.9	9		12						
24.0 - 25.9	4		4						
26.0 - 27.9	<u> </u>		<u> </u>						
28.0 - 29.9			1						
30.0 - 31.9	2		2						
32.0 - 33.9	1		1						
34.0 - 35.9									
36.0 - 37.9			ļ						
38.0 - 39.9									
		<u> </u>	1					I	
40.0 - 44.9	<u> </u>								
45.0 - 49.9			· · · · ·						
50.0 - 54.9									
55.0 - 59.9									
60.0 - 64.9									
<u> </u>	}								
70.0 - 74.9									· · · · · ·
80.0 - 84.9			+		· · · · · · · · · · · · · · · · · · ·				
80.0 - 89.9									
90.0 - 94.9	+								
95.0 - 99.9	+								
100.0 - +			<u> </u>						
	1		<u>†</u>						
Others not meas	1		1			,			
Total unmeasured	1		+	·····		· · · ·			
Total measured	63	16	91						
Grand Total	63	16	91	· · · · · · · · · · · · · · · · · · ·					
		1	1				1		
			:					<b> </b>	
1			T						
		A							

Estimated area seined:	Above Plant 0.27 ha		Plant Are intake to O	a (from plant <u>Lock &amp; Dam 3)</u> .08 ha	Below Lock and Dam 3 0.12 ha	
	No.	No./ha	No.	No./ha	No.	No./ha
Shortnose gar	0	0 .	4	50.00	0	0
Gizzard shad	101	374.07	198	2475.00	36	300.00
Carp	2	7.41	2	25.00	0	0
Emerald shiner	56	207.41	11	137.50	507	4225.00
River shiner	0	0	2	25.00	0	0
Spottail shiner	20	74.07	67	837.50	1	8.33
Spotfin shiner	14	51.85	9	112.50	20	166.67
Bullhead minnow	17	62.96	15	187.50	0	0
Ouillback carpsucker	2	7.41	0	0	Õ	Õ
Carpsucker spp.	7	25.93	10	125.00	õ	Ō
Smallmouth buffalo	7	25.93	33	412.50	õ	Õ
Bigmouth buffalo	Ó	0	1	12.50	Õ	Õ
Shorthead redhorse	1	3.70	Ó	0	Õ	0
White bass	126	466.67	55	687.50	Õ	Õ
Bluegill	8	29.63	9	112.50	Õ	Õ
White crappie	Õ	0	, Õ	0	2	16.67
Black crappie	4	14.81	Ğ	75,00	2	16 67
Johnny darter	2	7.41	3	37.50	0	0
Yellow perch	5	18.52	ĩ	12.50	õ	0
log perch	2	7.41	0	0	0	Ő
Sauger	ō	0	ĭ	12,50	Ő	õ
Walleve	6	22,22	Ó	0	õ	ñ
Freshwater drum	9	33.33	14	175.00	ĩ	8.33
Total	389	1440.74	441	5512.50	569	4741.67

Table 2.4-17 Summary of seining catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, spring 1978.

Estimated area seined:	<u>Abov</u>	e Plant 25 ha	Plant Area intake to 0	a (from plant Lock & Dam 3) .06 ha	Below Lock and Dam 3 0.12 ha	
	No.	No./ha	No.	No./ha	No.	No./ha
Shortnose gar	0	0	]	16.67	0	0
Gizzard shad	10	40.00	7	116.67	55	458.33
Northern pike	1	4.00	0	0	0	0
Carp	2	8.00	1	16.67	1	8.33
Silver chub	- 1	4.00	1	16.67	1	8.33
Emerald shiner	9	36.00	3	50.00	42	350.00
Pugnose minnow	1	4.00	0	0	0	0
Spottail shiner	58	232.00	18	300.00	]	8.33
Spotfin shiner	4	16.00	13	216.67	0	0
Bullhead minnow	0	0	2	33.33	0	0
Carpsucker spp.	0	0	2	33.33	0	0
Quillback carpsucker	0	0	1	16.67	0	0
White sucker	1	4.00	0	0	0	0
Smallmouth buffalo	2	8.00	0	0	0	0
Channel catfish	0	0	23	383.33	1	8.33
White bass	7	28.00	3	50.00	12	100.00
Bluegill	6	24.00	17	282.33	1	8.33
Smallmouth bass	3	12.00	1	16.67	0	0
White crappie	2	8.00	1	16.67	0	0
Black crappie	1	4.00	0	0	0	0
Yellow perch	1	4.00	0	0	0	0
Log perch	9	36.00	1	16.67	7	58.33
Sauger	2	8.00	1	16.67	2	16.67
Walleye	1	4.00	0	0	0	0
Freshwater drum	10	40.00	25	416.67	18	150.00
Total	131	524.00	121	2016.67	141	1175.00

Table 2.4-18 Summary of seining catches from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, summer 1978.

Estimated area seined:	<u>Abov</u>	<u>e Plant</u> 29 ha	Plant Area intake to 0	a (from plant <u>Lock &amp; Dam 3)</u> .07 ha_	Below Lock and Dam 3 0.14 ha	
	No.	No./ha	No.	No./ha	No.	No./ha
Gizzard shad	8	27.59	28	400.00	6	42.86
Northern pike	0	0	0	. 0	1	7.14
Silver chub	2	6.90	4	57.14	4	28.57
Emerald shiner	42	144.83	15	214.29	68	485.71
River shiner	0	0	0	0	1	7.14
Spottail shiner	19	65.52	7	100.00	0	0
Spotfin shiner	7	24.14	3	42.86	0	0
Bullhead minnow	27	93.10	9	128.57	0	0
Channel catfish	0	0	1	14.29	0	0
Tadpole madtom	1	3.45	0	0	0	0
White bass	2	6.90	1	14.29	9	64.29
Bluegill	4	13.79	22	314.29	0	0
Smallmouth bass	1	3.45	1	14.29	0	0
White crappie	1	3.45	0	0	0	0
Black crappie	0	0	0	0	]	7.14
Johnny darter	0	0	1	14.29	0	0
Sauger	0	0	0	0	2	14.29
Walleye	0	0	1	14.29	0	0
Freshwater drum	0	0	1	14.29	1	7.14
Total	114	393.10	94	1342.86	93	664.29

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Table 2.4-19	Summary of seining catches from the Mississippi River and connecting waters near
	the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, fall 1978.

Table 2.4-20.	Length-frequencies of all fish caught by seining in the Mississippi River and conne	ecting
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.	•
	Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 1 of 11)	

Total Length in Centimeters	Shortnose gar	Shortnose gar	Shortnose gar	Gizzard shad	Gizzard shad	Gizzard shad	Gizzard shad	Northern pike	Northern pike
	Spring	Summer	Total	Spring	Summer	Fall	Total	Summer	Fall
Y/Y not meas.				214			214		
0.1 - 1.9									
2.0 - 3.9				33	3	1	37		
4.0 - 5.9				57	2	3	62		
6.0 - 7.9				2		22	24		
8.0 - 9.9					1	6	7		
10.0 - 11.9					10	1	11		
12.0 - 13.9					44	1	45		
14.0 - 15.9					10	2	12		
16.0 - 17.9						4	4		
18.0 - 19.9				1		2	3		
20.0 - 21.9					·				· · · · · · · · · · · · · · · · · · ·
22.0 - 23.9			1			<b> </b>			
24.0 - 25.9									
26.0 - 27.9					2		2	· ·	
28.0 - 29.9									
30.0 - 31.9								1	
32.0 - 33.9			+						
34.0 - 35.9				L					
30.0 - 37.9							· · · · · · · · · · · · · · · · · · ·		
30.0 - 39.9			<b>I</b>		<b>L</b>	ļ	<b>_</b>		L
40.0 - 44.9			1	İ	İ	<u> </u>	1	[	
45.0 - 49.9		<b> </b>							1
50.0 - 54.9			<u> </u>						
55.0 - 59.9	2		2			1			
60.0 - 64.9	2		2				· ·		
65.0 - 69.9					-				
70.0 - 74.9									
75.0 - 79.9									
80.0 - 84.9									
85.0 - 89.9	ļ								
90.0 - 94.9		ļ							
95.0 - 99.9		ļ			L		<u></u>		
100.0 - +			<u> </u>			<u> </u>	<u> </u>	+	
		ļ	<u> </u>						
Others not meas.		1	1	28	<u> </u>		28		
Total unmeasurd		1		242			242		
Total measured	44	<u> </u>	4	93	72	42	207	1	
Grand Total	4	┼───	5	335	72	42	449	<u>                                      </u>	
	<u> </u>	+	+					<b></b>	
	<u> </u>	<u> </u>	÷				+	<u> </u>	
	<u> </u>			<u> </u>	<u> </u>				
· · · · · · · · · · · · · · · · · · ·	+	<u>†</u>	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	+		<u> </u>	+	
	ł		-t	ł	ł		+		1

Table 2.4-20. Length-frequencies of all fish caught by seining in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 2 of 11)

Total Length in Centimeters	Northern Pike	Carp	Carp	Carp	Silver <sup>C</sup> hub	Silver chub	Silver chub	Emerald s <b>hiner</b>	Emerald s <b>hiner</b>
	Total	Spring	Summer	Total	Summer	Fall	Total	Spring	Summer
			1	1	1		1		
Y/Y not meas.									
0.1 - 1.9			ļ						
2.0 - 3.9								3	5
4.0 - 5.9				ļ	2	1	3	4	32
6.0 - 7.9			ļ	<u> </u>	1	7	8	60	13
8.0 - 9.9						1	1		4
10.0 - 11.9				<u> </u>				1	+
12.0 - 13.9			<u> </u>					+	+
14.0 - 15.9			<u> </u>			·		+	
18.0 - 17.9			1		+		+	+	
18.0 - 19.9				┥──┘──	+			+	
20.0 - 21.9			<u> </u>	<u> </u>	· · · ·	+			+
22.0 = 23.9	<u> </u>				1	+			
26.0 - 27.9			1					-	1
28.0 - 29.9			1	1 1					1
30.0 - 31.9	1		<b></b>				1	1	1
32.0 - 33.9		· ·							1
34.0 - 35.9			1		1				1
36.0 - 37.9							-		
38.0 - 39.9									
		·····	·		+	· 		·	· · · · · · · · · · · · · · · · · · ·
40.0 - 44.9			ļ						
45.0 - 49.9	ļ	ļ1	<u> </u>	2					
50.0 - 54.9			2	2	+				
55.0 - 59.9		2		2		+		+	
60.0 - 64.9				+	+				
70.0 74.9				+		+			
70.0 - 74.9	<u> </u>	<u> </u>							
80.0 - 84.9	+		· · · · · · · · · · · · · · · · · · ·		+			+	+
85.0 - 89.9	+		1					+	
90.0 - 94.9	1		1	1	+	+	1		
95.0 - 99.9			1	1	-			1	
100.0 - +		1	1	1	1	1	1	1	1
Others not meas.							,	507	
Total unmeasured								507	
Total measured	2	4	4	8	3	10	13	67	54
Grand Total	2	4	4	8	3	10	13	574	54
	<u> </u>	<b>_</b>				·			
l		ļ	;						
	<b> </b>	ļ							
						+			
	<u> </u>								_

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Table 2.4-20.	Length-frequencies of all fish caught by seining in the Mississippi River and connect	ting
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.	
	Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 3 of 11)	

Total Length in Centimeters	Emerald s <b>h</b> iner	Emerald shiner	River shiner	River shiner	River shiner	Spottail shiner	Spottail shiner	Spottail shiner	Spottail shiner
	Fall	Total	Spring	Fall	Total	Spring	Summer	Fall	Total
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9	10	18		1	1	72	3	3	78
4.0 - 5.9	34	70	1		1	9	34	1	43
6.0 - 7.9	72	145	1		1		40	18	58
8.0 - 9.9	6	10				7		4	11
10.0 - 11.9								1	1
12.0 - 13.9									
14.0 - 15.9									
16.0 - 17.9								ļ	
18.0 - 19.9					+		<u> </u>	<b> </b>	↓
20.0 - 21.9							ļ		
22.0 - 23.9					·				+
24.0 - 25.9					+		<u> </u>	+	
26.0 - 27.9					+		<u> </u>	<u> </u>	+
28.0 - 29.9					+			· .	
30.0 - 31.9					+	+	<u> </u>		
32.0 - 33.9			<u> </u>			+			
34.0 - 35.9									
36.0 - 37.9					+	+		<u> </u>	
38.0 - 39.9		l			<b>_</b>	ļ	ļ	<b>_</b>	
40.0 - 44.9		t	t	1	+	1	1	1	1
45.0 - 49.9				<u> </u>	+	+			
50.0 - 54.9									
55.0 - 59.9			<u> </u>		1	-			
60.0 - 64.9						-		<u> </u>	
65.0 - 69.9									
70.0 - 74.9				1					
75.0 - 79.9		1		1	1	1	1		
80.0 - 84.9								1	
85.0 - 89.9									
90.0 - 94.9									
95.0 - 99.9									
100.0 - +									
	ļ		ļ	l				ļ	
Others not meas:	3	510	<b>_</b>				,		L
Total unmeasured	3	510	ļ	ļ			<u> </u>		
Total measured	122	243	2	↓ <u>1</u>	3	88	77	26	191
Grand Total	125	753	2	<u>                                      </u>	3	88	77	26	191
				+		- <u> </u>	<b>.</b>	<b>_</b>	ļ
	ļ			<u> </u>			<b>_</b>		
<b>-</b>	<b> </b>				+			+	
	<u> </u>	<u> </u>					<u> </u>	+	
				<u></u>			1		

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Table 2.4-20. Length-frequencies of all fish caught by seining in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 4 of 11)

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Total Length in Centimeters	Spotfin shiner	Spotfin shiner	Spotfin shiner	Spotfin shiner	Pugnose minnow	Bullhead minnow	Bullhead minnow	Bullhead minnow	Bullhead minnow
	Spring	Summer	Fall	Total	Summer*	Spring	Summer	Fall	lotal
Y/Y not meas.									
0.1 - 1.9					L				
2.0 - 3.9		1	7	8		ļ	1	16	17
4.0 - 5.9	33	10	3	46	1	28		19	47
6.0 - 7.9	8	6		14		4	ļ	1	5
8.0 - 9.9	2			2	ļ		ļ		
10.0 - 11.9							ļ		<b> </b>
12.0 - 13.9								<b></b>	
14.0 - 15.9									<b>  </b>
16.0 - 17.9						<u> </u>	<u> </u>		
18.0 - 19.9								<u> </u>	
20.0 - 21.9					· · · · ·				
22.0 - 23.9								<u> </u>	
24.0 - 23.9								<u> </u>	
28.0 - 29.9								<u> </u>	
30.0 - 31.9									
32 0 - 33 9									
34.0 - 35.9									<u> </u>
36.0 - 37.9									
38.0 - 39.9							_		
						÷		+	
40.0 - 44.9									
45.0 - 49.9									
50.0 - 54.9						_		L	
55.0 - 59.9								<u> </u>	
60.0 - 64.9		<b></b>					ļ	ļ	ļ
65.0 - 69.9				ļ					<u> </u>
70.0 - 74.9				ļ		+		<u> </u>	· · ·
75.0 - 79.9		1					+		
80.0 - 84.9						+		+	
85.0 - 89.9							+		
90.0 - 94.9									+
100 0 - +				<u> </u>		-	+		+
100.0		+			+	+			+
Others not meas				<u>†</u>	1		1 .	1 .	1 1
Total unmeasured		1	+		1	1	† i		1
Total measured	43	17	10	70	1	32	1	36	69
Grand Total	43	17	10	70	1	32	2	36	70
			·						
		<u> </u>	<u> </u>						

Table 2.4-20.	Length-frequencies of all fish caught by seining in the Mississippi River and connecting
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.
	Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 5 of 11)

Total Length in Centimeters	Carpsucker spp.	Carpsucker spp.	Carpsucker spp.	Quillback carpsucker	Quillback arpsucker	Quillback carpsucker	White sucker	Smallmouth buffalo	Smallmouth buffalo
	Spring	Summer	Total	Spring	Summer	Total	Summer*	Spring	Summer
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9	5		5					11	
4.0 - 5.9	7	1	8					25	
6.0 - 7.9	3		3					3	1
8.0 - 9.9	2	1	3						1
10.0 - 11.9									
12.0 - 13.9									
14.0 - 15.9				1		1			
16.0 - 17.9						ļ			
18.0 - 19.9									
20.0 - 21.9				1		1			
22.0 - 23.9					1	1			
24.0 - 25.9									
26.0 - 27.9						ļ			
28.0 - 29.9							1	ļ	
30.0 - 31.9		L				ļ		ļ	
32.0 - 33.9									
34.0 - 35.9									
36.0 - 37.9									
38.0 - 39.9			ļ			L			
	ļ	+	+		+	······	+	·	·
40.0 - 44.9	ļ			<b>_</b>	ļ				
45.0 - 49.9	ļ		· · · ·			ļ	ļ	ļ	
50.0 - 54.9								<u> </u>	
55.0 - 59.9					· · · · · · · · · · · · · · · · · · ·	<u> </u>		ļ	
60.0 - 64.9	ļ						· · · · ·		
65.0 - 69.9	<u> </u>		ļ		<u> </u>	<u> </u>			
70.0 - 74.9	·	<u> </u>							
75.0 - 79.9	<u> </u>		ļ	<u> </u>	<u> </u>	<u> </u>	<u> </u>		
80.0 - 84.9	· · · · · · · · · · · · · · · · · · ·		<u> </u>						
85.0 - 89.9									
90.0 - 94.9		ļ		<u> </u>					
95.0 - 99.9	+		+	<u> </u>	+		<u> </u>		
		+	+		<u> </u>	+			
			<u> </u>		+				
Others not meas.	<u> </u>								
Total unmedsured	17	2	10	2	1 1	+		40	2
Cuend Tetal	1/	2	10	2		1 3	· · ·	40	2
	+ ''		13	+	<u> </u>	+	<u> </u>	+	-
			·	+					+
	+	+	+	+	+		<u> </u>	+	+
	+		1		+	+	+		<u> </u>
			+		+	+	+	+	+
				4	1				

\* This species was caught during only one season.

Table 2.4-20.	Length-frequencies of all fish caught by seining in the Mississippi River and connecti	ng
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.	
	Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 6 of 11)	

Total Length in Centimeters	Smallmouth buffalo	Bigmouth buffalo	Shortnose redhorse	Channel catfish	Channel catfish	Channel catfish	Tadpole madtom	White bass	White bass
	Total	Spring*	Spring*	Summer	Fall	Total	Fall*	Spring	Summer
								1	
Y/Y not meas.			1			1		105	
		· · · · · · · · · · · · · · · · · · ·	1				1		
0.1 - 1.9								1	
2.0 - 3.9	11		1	1	1	1	1	12	
4.0 - 5.9	25	1		15		15		61	
6.0 - 7.9	4			9		9		1	3
8.0 - 9.9	1				1	1			6
10.0 - 11.9						1			3
12.0 - 13.9	1								
14.0 - 15.9								1	
16.0 - 17.9								1	
18.0 - 19.9									5
20.0 - 21.9	·								4
22.0 - 23.9									
24.0 - 25.9									1
26.0 - 27.9									
28.0 - 29.9			<u> </u>					<u> </u>	
30.0 - 31.9						·			
32.0 - 33.9									
34.0 - 35.9									
36.0 - 37.9									
38.0 - 39.9					1				
<u> </u>	7	1	1		1		1	1	+
40.0 - 44.9	1	<u> </u>		<u>}</u>		+			+
<u>45.0 - 49.9</u>	<u> </u>		· · · · · ·	+				+	+
55.0 50.0							+		+
55.0 - 59.9	+								
65.0 - 69.9		+	1		+			1	
70.0 - 74.9					1				
75.0 - 79.9		<u> </u>		1	1				<u>†           </u> †
80.0 - 84.9		<u> </u>		1		+	+	+	11
85.0 - 89.9	· ·	1			+	1	1		
90.0 - 94.9	1	1	1	1	<b></b>	1	1	1	1
95.0 - 99.9	1			1	1			1	11
100.0 - +		ļ	1						
	<u> </u>	<b></b>		ļ	+				<u> </u>
Others not meas.				<u> </u>			·	105	<u> </u> [
Total unmeasured	10	<u>↓</u>		21		25		76	22
iotal measured	42			24		25	<u> </u>	101	22
Grand Total	42		1		+	20			
	1	+		<u> </u>	+		+	-	1
	1	1	· <u>+</u>	1	+	1	+	+	
	1	1			1		1		
	1	1	1	1			1	1	
	. <u></u>	1		.d			1		1

Table 2.4-20.	Length-frequencies of all fish caught by seining in the Mississippi River and connect	ting
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.	
	Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 7 of 11)	

Total Length in Centimeters	White bass	White bass	Bluegill	Bluegill	Bluegill	Bluegill	Smallmouth bass	Smallmouth bass	Smallmouth bass
	Fall	Total	Spring	Summer	Fall	Total	Summer	Fall	Total
							1		
Y/Y not meas.		105							
0.1 - 1.9									
2.0 - 3.9		12		14	8	22			
4.0 - 5.9		61	2	4	17	23			
6.0 - 7.9		4	4		1	5	1		
8.0 - 9.9		6	8			8	2	1	3
10.0 - 11.9	1	4	]	1		2			
12.0 - 13.9	5	5		2		2	1 -		1
14.0 - 15.9		1	2			2		1	1
16.0 - 17.9		1		2		2			
18.0 - 19.9	1	6						1	
20.0 - 21.9	2	6							
22.0 - 23.9									
24.0 - 25.9	2	3							
26.0 - 27.9	1	1							
28.0 - 29.9									
30.0 - 31.9									
32.0 - 33.9	1						T		
34.0 - 35.9									
36.0 - 37.9									
38.0 - 39.9									
					•			· · · · · · · · · · · · · · · · · · ·	
40.0 - 44.9									
45.0 - 49.9									
50.0 - 54.9									
55.0 - 59.9									
60.0 - 64.9									
65.0 - 69.9				· · · · · · · · · · · · · · · · · · ·				ļ	
70.0 - 74.9						ļ			
75.0 - 79.9			L					L	
80.0 - 84.9									
85.0 - 89.9								ļ	
90.0 - 94.9									
95.0 - 99.9			ļ		ļ		ļ		
100.0 - +					ļ				
	ļ	·		ļ	ļ	<u> </u>	ļ		
Others not meas.			·	1		<u> </u> ].	· · · ·	ļ	
Total unmeasured	ļ	105							6
Total measured	12	110	17	23	26	66	4	4	
Grand Total	12	215	17	24	26	6/	4	<u> </u>	, °
	<b> </b>				<u> </u>	<u> </u>	+		+
				ļ	ļ	<b>_</b>			
<b> </b>	<b> </b>		<u> </u>		ļ				
					<u> </u>				ļ
L				I	Į	-	-l		

Table 2.4-20. Length-frequencies of all fish caught by seining in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet®8 of 11)

Total Length in Centimeters	White crappie	White crappie	White crappie	White crappie	Black crappie	Black crappie	Black crappie	Black crappie	Johnny darter
	Spring	Summer	Fall	Total	Spring	Summer	Fall	Total	Spring
							1		
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9					3			3	4
4.0 - 5.9		3		3		1		1	1
6.0 - 7.9									
8.0 - 9.9			1	1			11	1	
10.0 - 11.9					6			6	
12.0 - 13.9	2			2	1	<u> </u>		1	
14.0 - 15.9								L	
16.0 - 17.9				· · · · · · · · · · · · · · · · · · ·				Ļ	
18.0 - 19.9					1			1	
20.0 - 21.9						ļ		I	
22.0 - 23.9					· · · · · · · · · · · · · · · · · · ·	ļ		<u> </u>	
24.0 - 25.9							+	·	
26.0 - 27.9								ļ	
28.0 - 29.9							<u></u>	·	
30.0 - 31.9					<b> </b>		<u> </u>		
32.0 - 33.9		· · · · · · · · · · · · · · · · · · ·						<u> </u>	ļ
34.0 - 35.9					ļ	<u>                                      </u>		<u> </u>	
36.0 - 37.9					<u> </u>				
38.0 - 39.9		L	<u> </u>		<u> </u>	<u> </u>		ļ	
40.0 - 44.9		1	1	1	1	T	+	1	1
45.0 - 49.9									+
50.0 - 54.9						1	1	1	
55.0 - 59.9	1			<b> </b>			1.		
60.0 - 64.9				<u> </u>					
65.0 - 69.9	<u> </u>		<u> </u>		1	1			
70.0 - 74.9				<u> </u>	<u> </u>			1	
75.0 - 79.9	1				1	1	1	1	1
80.0 - 84.9			T	1					
85.0 - 89.9				1		1	1		
90.0 - 94.9									
95.0 - 99.9									
100.0 - +									
Others not meas.							,	<u> </u>	
Total measured	2	2	<u>                                      </u>	6	12	+	+	14	5
i o car measured					1 10		+	1 14	
Grand total	2	3	<u> </u>	6	12			14	
	<u> </u>		<u> </u>	+	1	+	+		+
t	<u> </u>	<u> </u>	<u> </u> :	· · · · ·	+				+
<b> </b>	<u> </u>	+	+		+				
	<u>}</u>	+	<u> </u>		+	+	+	+	+
	<u>+</u>	L	<u>t</u>	1	<u></u>	<u> </u>		+	+

Table 2.4-20. Length-frequencies of all fish caught by seining in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 9 of 11)

Total Length in Centimeters	Johnny darter	Johnny darter	Yellow perch	Yellow perch	Yellow perch	Log perch	Log perch	Log perch	Sauger
	Fall	Total	Spring	Summer	Total	Spring	Summer	Total	Spring
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9		4							
4.0 - 5.9		1	5		5	2	2	4	
6.0 - 7.9	1	1				1	7	7	
8.0 - 9.9				٦	1		8	8	1
10.0 - 11.9									
12.0 - 13.9			1		1		-		
14.0 - 15.9									
16.0 - 17.9									
18.0 - 19.9									
20.0 - 21.9									
22.0 - 23.9									
24.0 - 25.9									
26.0 - 27.9									
28.0 - 29.9								·	
30.0 - 31.9									
32.0 - 33.9									
34.0 - 35.9									
36.0 - 37.9								<b>_</b>	
38.0 - 39.9						ļ		 	
				·	1	<u></u>	t		·
40.0 - 44.9									
45.0 - 49.9			·	· · ·	· · · · · · · · · · · · · · · · · · ·	<u> </u>		<u> </u>	
50.0 - 54.9			· · · · · · · · · · · · · · · · · · ·			<u> </u>			· · · · · · · · · · · · · · · · · · ·
55.0 - 59.9									
60.0 - 64.9									
70.0 - 74.9		· · ·	ļ					<u> </u>	
70.0 - 74.9									
80.0 - 84.9						+		<b></b>	
85.0 - 89.9						1			
90.0 - 94.9				· · · · · · · · · · · · · · · · · · ·			<u> </u>		
95.0 - 99.9	·····								
100.0 - +			<u> </u>						
1						1			
Others not meas					<b> </b>	1			
Total unmeasured				· · · · ·	1			·	
Total measured	1	6	6	1	7	2	17	19	1
Grand Total	1	6	6	1	7	2	17	19	1
						·			
				· · · · · · · · · · · · · · · · · · ·					

Table 2.4-20. Length-frequencies of all fish caught by seining in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 10 of 11).

Total Length in Centimeters	Sauger	Sauger	Sauger	Walleye	Walleye	Walleye	Walleye	Freshwater drum	Freshwater drum
	Summer	Fall	Total	Spring	Summer	Fall	Total	Spring	Summer
Y/Y not meas									
0.0 - 1.9									
2.0 - 3.9						<u> </u>		7	
4.0 - 5.9								4	3
6.0 - 7.9				5			5	·	9
8.0 - 9.9			1	1			1		13
10.0 - 11.9	3		3		1		1		13
12.0 - 13.9	2		2					5	2
14.0 - 15.9		2	2			1	1	66	4
16.0 - 17.9					ļ			2	9
18.0 - 19.9					L	ļ		L	
20.0 - 21.9									
22.0 - 23.9					ļ			· · · · · ·	
24.0 - 25.9		ļ							
26.0 - 27.9					<u> </u>				
28.0 - 29.9					<b> </b>	<u> </u>		ļ	
30.0 - 31.9		ļ		ļ	ļ	ļ			
32.0 - 33.9				ļ	ļ			ļ	
34.0 - 35.9		· · · · · · · · · · · · · · · · · · ·			l				
36.0 - 37.9					ļ		ļ		
38.0 - 39.9					<u> </u>			ļ	
40.0 - 44.9			1	1	1	1	1	1	
45.0 - 49.9					1	1		<u> </u>	
50.0 - 54.9					1		1		
55.0 - 59.9		1							
60.0 - 64.9							· ·	1	
65.0 - 69.9							<b> </b>	· · · · ·	
70.0 - 74.9	1								
75.0 - 79.9	1		1.	1					
80.0 - 84.9	1						1		
85.0 - 89.9					1				
90.0 - 94.9	1								
95.0 - 99.9									
100.0 - +									
Others not meas									
Total unmeasured									
Total measured	5	2	8	6	1	1	8	24	53
Grand Total	5	2	8	6	1	1	8	24	53
	·	<u> </u>		<u> </u>	ļ	·			
L	ļ	ļ	;		ļ				
	ļ	ļ	ļ		ļ				
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	<u> </u>		<u> </u>	<u></u>					

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Table 2.4-20.	Length-frequencies of all fish caught by seining in the Mississippi River and connect	ting
	waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978.	
	Sections 0, 1, 2, 3, and 4 combined, seasons separated. (Sheet 11 of 11)	

Total Length in Centimeters	Freshwater drum	Freshwateı drum							
	Fall	Total							
Y/Y not meas.									
0.1 - 1.9									
2.0 - 3.9		7							
4.0 - 5.9		7							
6.0 - 7.9		9							
8.0 - 9.9	2	15							
10.0 - 11.9		13							
12.0 - 13.9		7							
14.0 - 15.9		10							
16.0 - 17.9		11							
18.0 - 19.9	<u> </u>								
20.0 - 21.9									
22.0 - 23.9				·····					
24.0 - 25.9									
26.0 - 27.9									
28.0 - 29.9								•	
30.0 - 31.9									
32.0 - 33.9		·		······					
34.0 - 35.9									
36.0 - 37.9									
38.0 - 39.9			L	,					
40.0 44.9		i	Í		<u> </u>	[			
40.0 - 44.9									
50.0 - 54.9			· ·						
55.0 - 59.9									
60.0 - 64.9				· ·					
65.0 - 69.9									
70.0 - 74.9									
75.0 - 79.9									
80.0 - 84.9									
85.0 - 89.9									
90.0 - 94.9			1						
95.0 - 99.9									
100.0 - +									
		·							
Others not meas.									
Total unmeasured						L			
Total measured	2	79	ļ	·		ļ	L		
Grand Total	2	79	<u> </u>			<b> </b>		ļ	
		ļ				· · · · · · · · · · · · · · · · · · ·			
		ļ		ļ	ļ	ļ			
	ļ								
· · · · · ·					<b> </b>		ļ	L	r
	ļ	<u> </u>			<u> </u>				

Table 2.4-21 Total numbers of fish tagged and released in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, April 9, 1974 through December 31, 1978, with numbers and percentages of tagged fish returned.

Species	Total No. tagged in 1978	Total No. tagged 1974 through 1978	Total No. of tags returned Apr. 9, 1974 through Dec. 31, 1978*	% returned of total tagged for each species
Northern pike	0	238	50 (2)**	21.00
Carp	0	15	0	0
Smallmouth buffalo	0	4	0	0
Channel catfish	66	216	9	4.13
Flathead catfish	17	31	1	3.22
White bass	35	3,053	347 (10)**	11.37
Smallmouth bass	4	110	11	10.00
Largemouth bass	0	22	5 (1)**	22.73
Sauger	7	1,130	131	11.59
Walleye	21	1,121	122	10.88 *
Total	150	5,940	676	11.38

\* Tagged fish recaptured more than once are recorded as one in this table.

\*\* Number of returns in parenthesis indicate the number of fish recaptured more than once.

Table 2.4-22 Recapture location of tagged fish relative to location released in the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1974 through 1978.\*

	No.	Upstream Mean ups movement	tream Range (mi) (mi)	No.	<u>Downstream</u> Mean down stream movement(	- Range (mi) mi)	<u>Stationary</u> No.	<u>Mean net</u> Direction	movement ** Distance (mi)
Species						•			
Northern pike	18	2.7	0.3-16.7	29	8.8	0.3-28.5	5	Downstream	4.0
Channel catfish	2	69.5	11.0-128.0	6	59.8	2.0-120.7	1	Downstream	24.4
Flathead catfish	0	0.0	والمعا وكري المالة معله والرب	0	0.0		1	None	0.0
White bass	57	16.7	0.3-66.0	136	19.2	0.4-110.3	164***	Downstream	4.6
Smallmouth bass	4	9.6	1.0-17.0	2	7.4	1.0-13.7	5	Upstream	2.1
Largemouth bass	0	0.0	800 AN 680 420 573	3	3.1	0.1-5.7	3	Downstream	1.6
Sauger	15	16.9	2.7-32.3	82	20.8	0.3-40.5	28 <del>1</del>	Downstream	11.6
Walleye	32	15.3	0.3-63.0	38	13.5	0.5-49.0	51++	Downstream	0.2

\* For fish recaptured more than once, the location of the prior recapture was considered the release location for the following recapture.

\*\* Difference between total upstream and total downstream distances divided by total number of fish (including stationary fish).

\*\*\* Location caught was not specified for one white bass, so this fish was not included in any of the calculations or figures on this table.

I Location caught was not specified for six sauger, so these fish were not included in any of the calculations or figures on this table.

++ Location caught was not specified for one walleye, so this fish was not included in any of the calculations or figures on this table.

Table 2.4-23 Length-weight relationships for selected species from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1978. (All sampling sections combined, summer and fall data separated).

	Summer 1978			 Fall 1978				
Species	Equation	Correlatio Coefficier	n it n	Equation	Correla Coeffic	Correlation Coefficient n		
Shortnose gar	log W = 3.2637 log L-6.1918	0.875	29	log W = 2.9789 log L-5.3816	0.922	29		
Gizzard shad	log W = 3.0686 log L-5.0781	0.993	73	log W = 2.9906 log L-4.9245	0.994	230		
Northern pike	log W = 3.1443 log L-5.5977	0.993	54	log W = 2.5571 log L-3.9272	0.983	48		
Carp	log W = 3.0047 log L-4.8727	0.982	429	log W = 3.1149 log L-5.1766	0.987	324		
Shorthead red- horse	log W = 2.9778 log L-4.9177	0.973	125	log W = 2.9558 log L-4.8598	0.986	94		
Channel catfish	log W = 3.4614 log L-6.2568	0.994	18	log W = 3.3102 log L-5.8701	0.989	30		
White bass	log W = 2.9566 log L-4.8130	0.991	369	log W = 3.0224 log L-4.9815	0.979	425		
Bluegill	log W = 3.0316 log L-4.6607	0.955	278	log W = 3.2701 log L-5.2122	0.959	278		
Smallmouth bass	log W = 2.9748 log L-4.8214	0.987	61	log W = 3.0377 log L-4.9825	0.990	49		
White crappie	log W = 2.9191 log L-4.6494	0.970	159	log W = 3.0884 log L-5.0879	0.957	233		
Black crappie	log W = 2.9173 log L-4.5986	0.980	295	log W = 3.1624 log L-5.1762	0.978	408		
Sauger	log W = 3.1000 log L-5.3541	0.988	38	log W = 3.2298 log L-5.6764	0.991	153		
Walleye	log W = 3.0562 log L-5.1974	0.996	28	log W = 3.2338 log L-5.6796	0.993	63		
Freshwater drum	log W = 2.9113 log L-4.7104	0.987	422	log W = 3.1799 log L-5.3809	0.978	249		

Table 2.4-24	Expected weights	for fish of v	various lengths	s from th	he Mississipp	oi River and	connecting
	waters near the	Prairie Island	l Nuclear Gener	rating P	lant, Red Wir	ig, Minnesota	, 1973-1978.
	Calculated from	length-weight	relationships	for all	stations con	bined. (Shee	t 1 of 3)

Le	ngth					Weight	(g)			
mm	in	1973	1974	1975	1976	1976	1977	1977	1978	1978
					Summer	Fall	Summer	Fall	Summer	Fall
	ad to <u>an an</u> an an an an an an an an an an an an an		- <u> </u>		Shortnose	gar				
550		سه هي کنا اسا							565	605
600		يري چين وي وي		* = = =				معة معة للتب عي	750	784
700		می بین افتا می							1241	1241
					Gizzard sha	ad				
150	5.9	36			39	38	38	34	40	38
200	7.9	90			95	93	94	83	96	91
300	11.8	318			330	334	330	292	334	304
350	13.8	516			528	543	532	472	535	483
,					Northern p	<u>ike</u>				
600	23.6	1424			1179	1440	1364	1400	1373	1502
700	27.6	2161			1948	2280	2123	2230	2229	2228
800	31.5	3102			3009	3418	3114	3335	3392	3135
900	35.4	4267			4415	4869	4365	4757	4913	4237
					Carp					
250	9.8	228			236	230	283	243	215	196
300	11.8	381			392	394	457	413	372	346
400	15.8	854			875	922	977	958	882	848
500	19.7	1598			1629	1783	1761	1838	1725	1700
600	23.6	2667			2708	3056	2850	3131	2984	3000
650	25.6	3339			3385	3872	3520	3956	3795	3849

2.4-129

Table 2.4-24 (cont'd) Expected weights for fish of various lengths from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978. Calculated from length-weight relationships for all stations combined. (Sheet 2 of 3)

Ler	ngth		·			Weight (	(q)			
mm	in	1973	1974	1975	1976 Summer	1976 Fall	1977 Summer	1977 Fall	1978 Summer	1978 Fall
<u> Andre and Andre and Andre and Andre and Andre and Andre and Andre and Andre and Andre and Andre and Andre and A</u>				Sho	orthead red	norse				
300 400 450	11.8 15.8 17.7	305 704 1027			343 688 915	334 797 1138	315 725 1021	307 733 1048	208 677 962	290 678 961
				(	Channel cat	<u>fish</u>				
300 400 450 500	11.8 15.8 17.7 19.7	203 522 767 1084			260 621 887 1220	247 665 998 1434	258 599 845 1149	228 587 864 1221	208 562 845 1217	214 554 818 1159
					<u>White bas</u>	5				
200 250 300 380	7.9 9.8 11.8 15.0	131 240 394 747		110 211 359 714	116 208 334 617	99 200 353 742	123 212 330 589	99 200 355 747	98 189 324 652	94 185 320 654
					<u>Bluegill</u>				•	
100 150 200									25 86 207	21 80 205
					Smallmouth	bass				
200 300	7.9 11.8	125 428		121 374	125 404	118 415	118 408	115 405	106 353	102 349

(cont'd.) Expected weights for fish of various lengths from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973-1978. Calculated from length-weight relationships for all stations combined. Table 2.4-24 (Sheet 3 of 3)

Ler	ngth					Weight (g	)			
mm	in	1973	1974	1975	1976 Summer	1976 Fall	1977 Summer	1977 Fall	1978 Summer	1978 Fall
			·		White crap	pie				<u></u>
200 250									117 224	104 208
					Black crap	pie				
150 200 250	5.9 7.9 9.8	59 134 254			59 134 254	54 136 277	53 130 261	55 136 276	56 130 249	51 126 255
					Sauger					
300 400 500	11.8 15.8 19.7	250 611 1220		241 600 1220	208 544 1069	225 583 1143	252 595 1158	228 613 1319	211 516 1030	211 534 1098
					Walleye					
300 450 550	11.8 17.7 21.6	275 908 1640	253 875 1620	256 886 1640	246 827 1507	250 885 1656	247 883 1657	239 818 1505	236 815 1506	214 795 1521
				Ē	reshwater	drum				
150 200 300 400	5.9 7.9 11.8 15.8	41 98 333 793	 		47 106 330 743	45 107 358 846	45 106 350 817	38 91 314 758	42 97 317 733	35 86 313 782

## Table 2.4-25 Summary of results from a multiple mark-recapture population estimate ending June 6, 1978 in the discharge area of the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota (Station 3-2).

Species	Total Marked	Estimated Number (N)*	95% Confidence interval*@	Est. No. per hectare	Mean wt. (kg)	Est. Standing crop (kg/ha)
Carp	135	2,587	1,057-6,463	1,848	1.60	2,957
White bass	17	54	23-127	39	0.30	12
Walleye	21	81	34-216	58	1.20	70
Freshwater drum	317	3,682	2,202-6,483	2,630	0.26	684

\*Unmarked mortalities have been added to N and to the confidence interval for N. @Confidence intervals calculated using Appendix II in Ricker (1975). Table 2.4-26 Abundance indices for 12 fish species using data from all seasons and all gears except seines, from the Mississippi River and connecting waters near the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1973 through 1978.

Species	1973	1974	1975	1976	1977	1978
Shortnose gar	0.87	1.32	0.91	0.90	1.96	0.95
Gizzard shad	1.99	0.78	1.10	0.63	3.89	0.70
Northern pike	1.32	1.11	0.99	0.82	0.57	0.71
Carp	0.90	1.25	0.70	1.14	0.87	0.65
Shorthead redhorse	0.84	1.05	0.54	1.48	1.12	0.84
White bass	0.79	1.18	0.68	1.24	1.26	0.99
Bluegill	0.85	1.74	0.51	0.86	2.54	1.51
White crappie	0.35	1.18	0.60	1.43	4.94	2.31
Black crappie	0.98	0.91	0.95	1.11	3.31	3.39
Sauger	1.79	1.08	0.97	0.65	0.40	0.78
Walleye	1.09	0.75	1.04	1.14	0.58	0.77
Freshwater drum	1.37	1.10	0.46	1.19	1.57	1.03

Table 2.4-27 Comparison of several population estimates made in the discharge area of the Prairie Island Nuclear Generating Plant, Red Wing, Minnesota, 1976 through 1978.

Species	Date of Estimate	Total no. of fish marked to date of estimate	Total no. of Recaptures	Estimated Number	95% Confidence interval	Source
Carp	Dec. 8, 1976	149	]	9,086	2,753-16,521	1
Carp	June 6, 1978	135	3	2,587	1,057- 6,463	3
White bass	Dec. 3, 1976	508	19	7,051	4,608-11,282	- <b>1</b>
White bass	Dec. 30, 1977	727	49	4,632	3,370- 5,894	2
White bass	June 6, 1978	17	2	54	23- 127	3
Walleye	Dec. 8, 1976	218	23	1,053	714- 1,620	<sup>1</sup>
Walleye	Dec. 30, 1977	50	4	306	137- 766	4
Walleye	June 6, 1978	21	2	81	34- 216	3.
Freshwater drum	June 6, 1978	. 317	13	3,682	2,202- 6,483	3
1 Gustafson	and Geis, 1977					

2 Gustafson, Fierstine, and Geis (1978)

3 This report

4 Calculated from unpublished 1977 data

2.4-134

