

ANGLER USE  
AND  
SPORT FISHING CATCH SURVEY  
ON  
RED RIVER,  
NORTH DAKOTA  
MAY 1, 2022 THROUGH September 30, 2022

Prepared by

Todd Caspers  
North Dakota Game and Fish Department  
7928 45<sup>th</sup> Street NE  
Devils Lake, ND 58301

Project F-2-R-68  
Study 4  
Number 3

April 2023



## TABLE OF CONTENTS

	PAGE
LIST OF FIGURES.....	ii
LIST OF TABLES.....	iv
LIST OF APPENDICES .....	vii
ACKNOWLEDGMENTS.....	viii
ABSTRACT.....	1
INTRODUCTION.....	1
DESCRIPTION OF STUDY SITE .....	2
METHODS.....	3
RESULTS AND DISCUSSION .....	9
RECOMMENDATIONS .....	16
LITERATURE CITED .....	18
FIGURES.....	20
TABLES.....	37
APPENDICES .....	69

## LIST OF FIGURES

FIGURE	PAGE
1. Sampling clusters for the Red River of the North creel survey. May 1 through September 30, 2022 .....	20
2. Cluster 1 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.....	21
3. Cluster 2 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.....	22
4. Cluster 3 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.....	23
5. Cluster 4 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.....	24
6. Cluster 5 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022 .....	25
7. Cluster 6 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022 .....	26
8. Orwell Dam sampling site, Red River of the North creel survey. May 1 through September 30, 2022 .....	27
9. Daily Discharge (at 12am) from four gauging stations on the Red River from April 15, through September 30, 2022 .....	28
10. Length distribution of caught and harvested Channel Catfish from the Red River creel survey, May 1 through September 30, 2022 .....	29
11. Length distribution of angler harvested Channel Catfish from the Red River creel survey and fish population assessment .....	31
12. Length distribution of angler harvested Channel Catfish from the Red River creel survey and fish population assessment. (Only 12" and larger catfish considered) .....	31

**LIST OF FIGURES (Continued)**

FIGURE	PAGE
13. Length distribution of caught and harvested Walleye from the Red River creel survey, May 1 through September 30, 2022 .....	32
14. Length distribution of caught and harvested Sauger from the Red River creel survey, May 1 through September 30, 2022 .....	33
15. Length distribution of caught and harvested Channel Catfish from the Ottetail River creel survey, May 1 through September 30, 2022 .....	34
16. Length distribution of caught and harvested Walleye from the Ottetail River creel survey, May 1 through September 30, 2022 .....	35
17. Length distribution of caught and harvested Smallmouth Bass from the Ottetail River creel survey, May 1 through September 30, 2022 .....	36

## LIST OF TABLES

TABLE	PAGE
1. Sampling sites included in the Red River creel survey, May 1 through September 30, 2022. ....	37
2. State of residence for anglers encountered in the Red River creel survey, May 1 through September 30, 2022 .....	38
3. Species preference from anglers encountered in the Red River creel survey, May 1 through September 30, 2022 .....	39
4. Monthly angling effort (standard error) by angler type and sampling cluster, from the Red River creel survey, May 1 through September 30, 2022.....	40
5. Monthly total angling effort (standard error) by sampling cluster from the Red River creel survey, May 1 through September 30, 2022.....	41
6. Summary of historical angling effort from Red River creel surveys, 1994-2022. ....	42
7. Channel Catfish catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	43
8. Summary of historical gamefish catch and harvest during Red River creel surveys, 2001-2022. ....	44
9. Estimated numbers and pounds of gamefish harvested by anglers during the Red River creel survey, May 1 to September 30, 2022.....	45
10. Channel Catfish catch and harvest rates (fish/hour), by sampling cluster and month. Red River Creel Survey, May 1 to September 30, 2022. ....	46
11. Walleye catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	47
12. Sauger catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.....	48

**LIST OF TABLES (Continued)**

TABLE	PAGE
13. Lake Sturgeon catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	49
14. Goldeye catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	50
15. Freshwater Drum catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.....	51
16. Smallmouth Bass catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	52
17. Crappie catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	53
18. Bullhead species catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	54
19. Common Carp catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.....	55
20. Mooneye catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	56
21. Northern Pike catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	57
22. Redhorse species catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	58
23. Rock Bass catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	59

**LIST OF TABLES (Continued)**

TABLE	PAGE
24. Stonecat catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.....	60
25. White Bass catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	61
26. White Sucker catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	62
27. Yellow Perch catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022. ....	63
28. Bigmouth Buffalo catch and harvest estimates (number of fish), by sampling cluster and month. River creel survey, May 1 to September 30, 2022. ....	64
29. Bluegill catch and harvest estimates (number of fish), by sampling cluster and month. River creel survey, May 1 to September 30, 2022. ....	65
30. Estimated numbers and pounds of nongame fish harvested by anglers during the Red River creel survey, May 1 to September 30, 2022. ....	66
31. Estimated Catch, Percentage of Catch, Harvest, and Percentage of Harvest by anglers during the Red River creel survey, May 1 to September 30, 2022. ....	67
32. Estimated Catch, Percentage of Catch, Harvest, and Percentage of Harvest by anglers during the Otter Tail River creel survey, May 1 to September 30, 2022. ....	68



## LIST OF APPENDICES

<b>APPENDIX</b>		<b>PAGE</b>
Appendix A.	Creel survey schedule for Fargo Red River creel clerk, May 1 through September 30, 2022. ....	69
Appendix B.	Creel survey schedule for Grand Forks Red River creel clerk, May 1 through September 30, 2022. ....	70
Appendix C.	Example Datasheet Used for the 2022 Red River Creel Survey (Front). ....	71
Appendix D.	Example Datasheet Used for the 2022 Red River Creel Survey (Back). ....	72
Appendix E.	Example Creel Card for online survey. ....	73
Appendix F.	Sample sizes (n) used for calculation of major fish species (species that the online survey directly asked about) catch, harvest, and release rates, by month and cluster. ....	73
Appendix G.	Monthly Estimated Angler Effort and Effort Ranking for sites included in the 2022 Red River Creel Survey. ....	74

## **ACKNOWLEDGMENTS**

This project was supported by the North Dakota Game and Fish Department and Federal Aid funds (F-2-R-68, Study 4, Number 3).

We would like to thank Eric Anderson and Jordan Myren, the Red River creel clerks, for their work interviewing anglers and collecting data during this creel survey. We would also like to thank Nicholas Kludt, (MN DNR) for his work developing the online creel card survey. We would also like to thank Lisa Tofte for entering all of the angler count and interview data into Excel.

## **ABSTRACT**

A creel survey of Red River anglers was conducted from May 1 through September 30, 2022. The roving creel survey included anglers fishing from accesses located in both Minnesota and North Dakota.

Estimated angling effort on the Red River (63,057 hours) was the lowest of any Red River survey since 1994, and about 30% below the estimated effort during the 2015 survey. Much of the reduced effort occurred in May and June, particularly within the lower sections of the Red River, likely due to extensive flooding.

Channel Catfish comprised 29% of the total number of fish harvested in the 2022 survey (4,368 fish; 14,974 pounds). Other gamefish harvested during the survey included Walleye (1,820 fish; 2,498 pounds), Sauger (231 fish; 202 pounds) and Smallmouth Bass (305 fish; 288 pounds).

The estimate of angler effort on the Otter Tail River (10,288 hours) was higher than the previous survey in 2015. Otter Tail River anglers harvested 838 Channel Catfish and 1,646 Walleye.

## **INTRODUCTION**

The Red River and its tributaries support popular recreational fisheries in Northwest Minnesota and Northeast North Dakota, with a well-known trophy Channel Catfish population. An additional 83 fish species are found in the Red River basin (Koel 1997) including popular gamefish such as Walleye, Sauger, Northern Pike, and Smallmouth Bass. To monitor this popular fishery, multiple creel surveys have been conducted on the Red River during the past 29 years.

The Minnesota Department of Natural Resources (MN DNR) conducted the first comprehensive creel survey for U.S. waters of the Red River from May 1 through September 5, 1994 (Topp 1996). The Red Lake River (MN) from East Grand Forks to Crookston was also sampled during that survey. In 1994, creel clerks sampled all sites with any evidence of angler

activity. A total of 100 sites were included in the survey, although no activity was documented at 42 of the sites.

The North Dakota Game and Fish Department (NDGF) conducted the next Red River creel survey during the spring of 1998 and 1999 (Schlueter 1999; Brooks and Schlueter 1999). These surveys were designed to evaluate angler effort and fish harvest during the spring after North Dakota adopted a “year-round” fishing season for the Red River and tributaries on April 1, 1998.

A two-year creel survey of the Red River was also conducted in 2000 and 2001. The 2000 portion of the survey was coordinated by Western Aquatic Technology and Environments Resource Services (WATERS), a consulting firm hired by NDGF (Brooks and Schlueter 2002). In 2001, MN DNR coordinated a creel survey of the Red River with additional sites on the Red Lake River and Otter Tail River in Minnesota (Topp 2003). The number of sampled sites on the Red River was reduced from 110 in 1994 to 44 during the 2001 survey.

The next Red River survey, in 2010, was once again coordinated by WATERS and NDGF (Brooks and Gangl 2012). That creel survey ran from April 1 through October 31, 2010 and included 30 sites on the Red River.

The next survey was again conducted by the Minnesota Department of Natural Resources in 2015 (Wendel 2015). This survey ran from May 1 through September 30 and included 25 sites on the Red River, as well as one site on the Otter Tail River and two sites on the Red Lake River.

## **DESCRIPTION OF STUDY SITE**

The Red River of the North begins at the confluence of the Bois de Sioux and Otter Tail Rivers and flows northward approximately 545 miles through the bed of glacial Lake Agassiz before emptying into Lake Winnipeg. It forms the border between Minnesota and North Dakota for nearly 400 miles before flowing into the Province of Manitoba (Renard et al. 1986).

Seven of the eight dams on the United States segment of the Red River have been

converted to rock arch rapids to allow fish passage, remove hydraulic currents, and reduce public safety hazards. Within US waters, one unmodified dam on the Red River remained at Drayton, ND, but work to retrofit this dam began during the survey period and work should conclude in 2023. Additionally, a dam on the Canadian segment of the Red River near Lockport, Manitoba restricts fish passage.

Many dams on tributaries to the Red River have also been removed or modified. The Red Lake River is free of barriers from where it enters the Red River in East Grand Forks upstream to the Thief River Falls Dam. Also, the dam on the Otter Tail River that formed Lake Breckenridge was modified to allow fish passage. The Otter Tail River is barrier free from where it joins the Bois de Sioux River to form the Red River in Breckenridge, MN upstream to Orwell Dam.

## **METHODS**

The Red River was divided into four routes (Appendix 1 and 2), but the same six sampling clusters (Figure 1) which contained a total of twenty-four sites (Table 1) from the 2015 survey were used during data analysis in the 2022 creel survey (Figures 2-7). Additionally, one site on the Otter Tail River (Figure 8) was surveyed. The Otter Tail River site was included with the route 1 sites.

Monthly schedules included four, 10-hour shifts per week (two weekday, two weekend shifts) from May through August and five, 8-hour shifts per week (three weekday, two weekend shifts) in September. Separate schedules were generated for each creel clerk. One clerk, based out of Fargo, worked the Orwell site on the Otter Tail River and routes 1 and 2 on the Red River. The other creel clerk was based out of Grand Forks and worked routes 3 and 4 on the Red River. Regimented daily schedules included an arrival and departure time at each site within the route selected. The first site of a route to be sampled was randomly selected for each shift. The direction of travel was randomly selected. However, some potential routes were not used due to the excessive amounts of travel time required. The amount of time that the clerk was scheduled to stay at each site was based on historical angler-use data, so clerks spent more

time at busier sites.

The “fishing hours” each day for each month were defined as being 16 hours long (06:00 to 22:00). Scheduled routes were generally 06:00 to 14:00 and 12:00 to 22:00 for AM and PM shifts, respectively, but times could be modified slightly to account for day length. Two hours were worked during each shift when clerks collected additional interviews but did not conduct counts in May, June, July, and August. This period of time was defined as “free creeling” and was randomly selected to occur at the beginning or end of each shift. However, during September, the “free creeling” period was discontinued and routes generally occurred from 07:00 to 15:00 or 12:00 to 20:00.

An instantaneous count of bank anglers and boat angling activity was conducted at each site visited. The predetermined count was randomly selected to occur either at arrival or just prior to departure at each site. All instantaneous counts were assumed to be representative of the activity for that day and data analysis was not stratified by AM and PM shifts.

The number of vehicles with boat trailers was counted at each site as the first step to estimate boat angling activity. Boat angling effort was calculated by multiplying the average number of boat trailers at each site by the average boat party size, then multiplying by the number of “fishing hours” (defined as 16) and then multiplying by the number of days in each stratum. For example, the Pembina site averaged 0.25 boat trailers per count in the July weekend stratum. Estimated boat angling effort was 103 angler hours ( $0.25 \text{ ave. count} * 2.34 \text{ ave. party size} * 16 \text{ hours} * 11 \text{ days in the stratum}$ ). This methodology differed from that used in 2015 (Wendel, 2015) due to some former “cluster sites” not being in the same “routes” used in 2022. In 2015, daily boat trailer counts for each site within a cluster were summed to produce daily cluster totals and mean daily totals for each cluster were calculated from these totals. In this survey, boat effort was calculated for each individual site and then all estimates within a cluster were added together to produce the estimated boat angler cluster effort.

Party-size data was collected by the creel clerk during angler interviews and also obtained from online creel card survey respondents. Mean party size was defined as the mean number of

anglers per boat, calculated by stratum (weekdays vs. weekend days). Due to the low number of boat angler interviews at some sites, the mean number of anglers per boat from all interviews throughout the study area was used to estimate boat angler effort.

Shore angling effort was calculated by multiplying the average number of shore anglers at each site by the number of daylight hours (16) and the number of days in each stratum. For example, the Pembina site averaged 0.4 shore anglers per count in the July weekday stratum. Estimated shore angling effort was 128 angler hours ( $0.4 * 16 \text{ hours} * 20 \text{ days in the stratum}$ ). Total variance of angler effort estimates for each cluster for each month was calculated as the sum of the variances of angler effort for each angler type by stratum by site; the square root of the total variance is offered as a conservative estimate of standard error.

While at each site, clerks collected catch and harvest data, trip information, and angler demographics from as many anglers as possible. Clerks prioritized interviews of boat anglers that had completed their fishing trip, followed by shore anglers that had completed their fishing trip, followed by incomplete anglers. In an effort to obtain more complete trip interview data, “creel cards” were given to incomplete shore anglers who were interviewed if they seemed interested in completing the survey and also left on boat trailer tow vehicles. The cards allowed incomplete shore anglers to go online to complete their catch and harvest information and allowed boat anglers who had not been interviewed by the clerk to complete an online version of the interview.

Due to a lack of interviews in many strata, shore and boat interviews were combined to calculate angler catch and harvest rates by cluster and month. All interviews were treated as incomplete trip interviews. However, catch and harvest data from incomplete interviews where the angler had fished for less than 0.5 hours was not utilized (Pollok et. al., 1994). Since complete and incomplete trip interviews were combined for analysis, measures of variance for catch and harvest were not calculated. Preliminary analysis indicated that variability was often relatively high, likely due to the combination of relatively low sample sizes in many strata (Appendix F.), utilizing incomplete angler data, combining boat and shore anglers, and the

diversity of the Red River fishery itself. Harvest rates were calculated using the following equations:

$$(5) \quad AH_i = P_i * T_i$$

$$(6) \quad HPUE_i = \frac{F_i}{AH_i}$$

$$(7) \quad \overline{HPUE} = \frac{\sum(HPUE_i)}{n}$$

Where:

$AH_i$  = a party's angler hours

$P_i$  = the number of anglers in a party

$T_i$  = the amount of time a party had been fishing

$HPUE_i$  = a party's harvest rate

$F_i$  = the number of fish, of a species, caught by a party

$\overline{HPUE}$  = mean harvest rate of a species

Catch rates were calculated with the same equations as above, replacing "H" with "C". Also, individual data was utilized rather than party data. The data from boat anglers who responded to the online creel card survey was reported in party format. These data were converted to simulated individual data by dividing up fish numbers as equally as possible between individual party members. For example, if a party of three reported harvesting 4 Channel Catfish, two anglers were assigned as having harvested one catfish, but one angler was assigned as harvesting 2 catfish. Estimated catch and harvest were calculated by multiplying the catch or harvest rate by the estimated total effort for each strata (cluster and month).

Length-weight relationship equations were used to generate the estimated weight of harvested fish. Length-weight relationships were re-used from the 2015 Red River Creel Report



(Wendel, 2015; Carlander 1969). The length-weight relationship equations used to calculate a weight for each species were as follows:

$$\text{Black Crappie} \quad \text{Weight}(\text{pounds}) = \frac{10^{-5.630+3.35(\log(\text{len}(\text{mm})*25.4))}}{454}$$

$$\text{Bullhead Species} \quad \text{Weight}(\text{pounds}) = \frac{10^{-4.613+2.887(\log(\text{len}(\text{mm})*25.4))}}{454}$$

$$\text{Carp} \quad \text{Weight}(\text{pounds}) = \frac{10^{-4.239+2.736(\log(\text{len}(\text{mm})*25.4))}}{454}$$

$$\text{Channel Catfish} \quad \text{Weight}(\text{pounds}) = \frac{10^{-6.049+3.374(\log(\text{len}(\text{mm})*25.4))}}{454}$$

$$\text{Freshwater Drum} \quad \text{Weight}(\text{pounds}) = \frac{10^{-8.786+2.337(\log(\text{len}(\text{mm})*25.4))}}{454}$$

$$\text{Goldeye} \quad \text{Weight}(\text{pounds}) = \frac{10^{-4.638+2.844(\log(\text{len}(\text{mm})*25.4))}}{454}$$

Largemouth Bass  $Weight(pounds) = \frac{10^{-5.630+3.35(\log(len(mm))*25.4)}}{454}$

Northern Pike  $Weight(pounds) = \frac{10^{-5.536+3.12(\log(len(mm))*25.4)}}{454}$

Redhorse spp  $Weight(pounds) = \frac{10^{-4.881+2.975(\log(len(mm))*25.4)}}{454}$

Rock bass  $Weight(pounds) = \frac{10^{-4.92+3.055(\log(len(mm))*25.4)}}{454}$

Sauger  $Weight(pounds) = \frac{10^{-5.423+3.14(\log(len(mm))*25.4)}}{454}$

Smallmouth Bass  $Weight(pounds) = \frac{10^{-5.330+3.18(\log(len(mm))*25.4)}}{454}$

Stonecat  $Weight(pounds) = \frac{10^{-4.426+2.841(\log(len(mm))*25.4)}}{454}$

Walleye  $Weight(pounds) = \frac{10^{-5.236+3.08(\log(len(mm))*25.4)}}{454}$

White Sucker  $Weight(pounds) = \frac{10^{-4.785+2.914(\log(len(mm))*25.4)}}{454}$

There was only one species where a different length-weight equation was used. The equation listed for Freshwater Drum was determined to be erroneous, as it produced illogical weight values. The intercept and slope values were replaced with -5.419 and 3.204, respectively (Blackwell et al. 1995).

Anglers were asked by creel clerks to identify what species were targeted on their fishing trip. Species targeted was calculated as the percent of anglers that identified that species as the target, unweighted by length of fishing trip.

### **Angler Characteristics and Preference**

Angler interviews were also used to determine the mean number of anglers per party (needed in angler effort estimates), and residence. Other questions were also asked pertaining to angler preferences, and the management of the Red River fishery.

### **Red River Results and Discussion**

A total of 553 angler parties representing 947 people provided information to creel clerks during the 2022 Red River survey. These interviews included 480 (848 people) from the Red River and 73 (99 people) from the Otter Tail River. An additional 108 boat parties “returned” creel cards by completing the online survey. However, due to an error in the online survey until August (survey did not ask for # of anglers in the boat in some instances), data from only 90 parties (203 people) was deemed useable for all data analysis. A total of 72 useable creel cards were returned by shore anglers to update their information (57 from the Red River and 15 from Ottertail River).

Anglers fished an estimated 63,057 hours on the Red River during this survey (Tables 4 and 5). The total effort was about 30% below the previous survey in 2015 and was the lowest estimated effort found in any Red River survey since 1994 (Table 6). The design and timing of Red River creel surveys has changed over time and caution should be used when evaluating trends from these highly variable estimates.

Estimates of angler effort are highly variable, both statistically and logistically. External variables to the survey such as high flows, weather, and changes in access conditions can all impact year to year estimates. This variability creates uncertainty when drawing conclusions on short-term trends.

It is highly likely that river conditions heavily influenced the low angler effort estimated during this survey. 2022 was a major flood year on the Red River. Conditions in May and early June were so poor in the northern portions of the river that all sites were either inundated with flood water or were closed to public access. Because of this, the start date for the creel clerk was delayed until June 11<sup>th</sup>. Due to the extreme flooding in May, all sites from Belmont Park and northward were assumed to have had zero fishing effort in May (Table 4). Conditions in the southern clusters were less extreme than in the north, however, prolonged flooding still occurred. For example, river levels above flood stage persisted until mid-June in Fargo and river levels didn't consistently drop below flood stage until mid-June in Wahpeton either. However, previous survey reports have also noted that high flows and impaired access may have impacted effort estimates, although likely not to the degree observed in this survey. Boat access at the Drayton Dam site was so degraded due to flooding, that the first boat trailer wasn't counted until August 12<sup>th</sup>. It seems likely that if the extreme flooding had not occurred in May and June of 2022, that this survey may have shown a small increase in effort compared to the 2015 survey, as all effort estimates from July onward with only one exception (August boat effort) were higher in this survey than in 2015.

Most Red River anglers interviewed by creel clerks identified either North Dakota (65.7%) or Minnesota (24.8%) as their primary state of residence, with residents of Iowa coming in at a distant third (3.3%) (Table 2). The majority (69%) of all anglers on the Red River targeted Channel Catfish (Table 3). The majority of shore anglers (58%) were targeting Channel Catfish while boat anglers targeted Channel Catfish nearly exclusively (93%). Shore anglers also targeted "Anything" (19%) and Walleye (11%) relatively frequently. The amount of attention that anglers gave Channel Catfish in this survey was very similar to the 2015 survey

(Wendel, 2015).

An estimated 4,368 Channel Catfish were harvested on the Red River during the 2022 creel survey (Table 7), comprising 29.1% of the total number of fish harvested. Estimated harvest of Channel Catfish in the 2022 survey was lower than in the 2015 survey (6,868) and 2010 survey (6,866) (Table 8). Estimated harvest was distributed among the six clusters, ranging from 378 fish in Cluster 1 to 1,352 fish in Cluster 6. Estimated harvest of Channel Catfish was highest in August and July. The total estimated Channel Catfish harvest in the 2022 survey was 14,975 pounds (Table 8). Angler catch rates of Channel Catfish were highest in June and July (Table 10).

Harvested Channel Catfish measured by creel clerks ranged from 4 to 39 inches with a mean of 18 inches and a mode of 12 inches (Figure 10). A Channel Catfish netting assessment was also conducted in the spring of 2022 (Kludt 2023). At first glance, it appears as though catfish 12" long and larger are generally being harvested at rates greater than their abundance (Figure 11). However, this situation is likely exacerbated by the large numbers of catfish that were relatively small in the netting survey and anglers are likely not willing to harvest such small catfish. When only 12" and larger catfish are considered (Figure 12), harvesting fish at rates greater than their abundance seems to become prevalent at about 17". Annual mortality was found to be relatively high in the Channel Catfish netting survey (32%), although the large numbers of small, young fish, may have impacted the estimate more than usual (Kludt 2023). Canada allows no harvest of Channel Catfish > 24 inches while the U.S. portion of the Red River allows harvest of one fish > 24 inches. Siddons (2015) suggested that differences in Channel Catfish regulations between the Canadian and U.S. portions of the Red River may have contributed to the observed differences in mortality estimates, with the Canadian estimate (11%) being lower than in the USA.

The mean weight of Channel Catfish harvested by Red River anglers in 2022 was 3.4 pounds. Catfish mean weights from previous Red River creel surveys ranged from 1.8 to 5.1 pounds (Topp 1996, 2003, Wendel 2015). Mean weight of harvested Channel Catfish was not

documented in the 2010 creel survey but likely would have been 5.2 pounds (35,688 pounds/6,866 fish) (Brooks and Gangl 2012).

Approximately 10% of Channel Catfish caught by Red River anglers were harvested in 2022. In 2015, about 15% of catfish caught were harvested (Wendel 2015) and in 2010, 19% of Channel Catfish caught were harvested (Brooks and Gangl 2012). Twenty-four percent of Channel Catfish harvested by Red River anglers were longer than 24 inches in 2022. In the 2015, 2010 and 2001 creel surveys, 38%, 36% and 26% of Channel Catfish harvested were longer than 24 inches, respectively (Wendel 2015; Brooks and Gangl 2012; Topp 2003). The “harvest risk” for catfish 24” and larger was calculated to be 26%, as 26% percent of catfish longer than 24 inches that were caught on the Red River were harvested, which was similar to the 30 percent reported in the 2015 survey (Wendel 2015).

Angler harvest of Walleye on the Red River was estimated at 1,820 fish and 2,498 pounds (Table 11). Lengths of harvested Walleyes ranged from 12-22 inches (Figure 13). Sauger harvest on the Red River was estimated at 231 fish and 202 pounds (Table 12). Lengths of harvested Sauger ranged from 13 to 16 inches (Figure 14). Most of the Sauger harvest occurred in Clusters 6 (197 fish) and 2 (34 fish).

Walleye and Sauger harvest on the Red River has been found to be relatively high during the months of March and April (Brooks and Schlueter 1999) but those months were not included in this creel survey due to budget constraints and this survey focusing on catfish targeting anglers. Antidotally, there seemed to be good Walleye fishing in October, 2022, according to social media posts (North Dakota River Fishing Facebook Page). Therefore, the harvest estimate produced in this survey should be considered conservative. If more complete data collection of the Walleye harvest and catch is desired, the months of March, April and October should be considered for inclusion in creel surveys.

In 2015, Minnesota initiated a catch and release season for Lake Sturgeon open from June 16 to April 14 of the following year; anglers may not target Lake Sturgeon from April 15 through June 15 annually. Even with this open season, zero anglers reported targeting Lake

Sturgeon on the Red River in 2022. There was incidental catch of Lake Sturgeon estimated in Cluster 5 (Table 13), which accounted for all 119 of the estimated sturgeon catch.

Estimated catch and harvest of all other species are reported in Tables 14-29. Summaries of total estimated numbers and pounds of nongame fish harvested are reported in Table 30. The total estimated catch and harvest of all the prominent Red River species is summarized in Table 31. A single creek chub (harvested) and a single tadpole madtom (released) were also reported to have been caught in the Red River, but catch and harvest estimates were not produced for these species.

### **Otter Tail River Results and Discussion**

Estimated angler effort on the Otter Tail River in 2022 was 10,288 hours (Table 5). This estimate was higher than the estimate in 2015 (9,525 hours) but lower than the estimate in 2001 (12,921 hours) (Topp 2003). The 2001 survey included an additional site on the Otter Tail River at the dam on Lake Breckenridge. However, very low angler effort had been observed at this site since the dam was modified to allow fish passage in 1996 (Wendel 2015).

Residents of Minnesota (77.4%) and North Dakota (14.0%) made up the vast majority of anglers encountered at the Otter Tail River (Table 2), with residents of Wisconsin coming in at a distant third (3.2%). Walleye (42%), Channel Catfish (13%) and Smallmouth Bass (8%) were the most targeted fish species by Otter Tail River anglers. No particular species (anything) was targeted by 17% of anglers. One angler reported targeting Lake Sturgeon along with Walleye.

Freshwater Drum (22.1%) were the most caught species on the Otter Tail River in the 2022 creel survey followed by Goldeye (20.5%), Walleye (17.2%), Smallmouth Bass (14.7%), and Channel Catfish (10.9%) (Table 32). Walleye (55.4%) and Channel Catfish (28.2%) were the most harvested species on the Otter Tail River (Table 32). No harvest of Smallmouth Bass was allowed, or observed, on the segment of the Otter Tail River surveyed in 2022. Length frequencies of Otter Tail River caught and harvested Channel Catfish, Walleye, and Smallmouth Bass were reported in Figures 15-17. A single common shiner (released) was also reported to

have been caught, but a catch estimate was not produced for this species.

The following is a summary of angler responses to angler preference questions for both the Red River and Otter Tail River.

**1. What was the primary species you were fishing for today?**

When boat and shore anglers were combined, most Red River anglers were targeting Channel Catfish (68.7%), but many anglers were targeting anything (14%). Boat anglers targeted Channel Catfish almost exclusively (92.5%), whereas shore anglers often targeted Channel Catfish (57.8%), but many were targeting anything (18.8%) and Walleye were relatively popular as well (10.9%).

Otter Tail River anglers generally targeted Walleye (42.1%), but many were targeting anything (16.8%), Channel Catfish (12.6%), or Smallmouth bass (8.4%), as well as various other species or combinations of species. Detailed species preference results are shown in Table 3.

**2. Have you been previously surveyed in the Red River Creel Survey this year?**

About 14.2% (125 people) of Red River respondents to this question said that they had been previously surveyed, whereas 85.8% (757 people) had not.

About 14.7% (14 people) of Otter Tail River respondents to this question said that they had been previously surveyed, whereas 85.3% (81 people) had not.

**3. Is the opportunity to catch large Channel Catfish a major reason you are fishing the Red River?**

Of the 742 people who answered this question, about 73% (542) said yes to this question, whereas 27% (200) said no. Of the 474 people who were targeting catfish specifically, about 86.7% (411) said yes, but 13.3% (63) said no. Of the 268 people who



were not targeting catfish specifically, 48.9% (131) said yes, and 51.1% (137) said no.

**4. Have you ever caught a tagged Channel Catfish in the Red River? If yes, did they report it?**

Of the 748 people who answered this question at Red River sites, only about 6.7% (50) of people reported that they had caught a tagged catfish, whereas 93.3% (698) indicated that they had not caught a tagged catfish.

Of the 50 people who reported catching a tagged catfish on the Red River, 77.1% (37) said that they had reported it whereas 22.9% (11) did not.

Of the 81 people who answered this question at the Otter Tail River site, only about 1.2% (1) of people reported that they had caught a tagged catfish in the Red River.

**5. What percentage of your open water fishing is spent targeting Channel Catfish?**

When all Red River anglers were considered, the average percentage of time spent targeting catfish was 43.8%. When only anglers who were targeting catfish specifically was considered, the average increased to 53.1%. When anglers who weren't targeting catfish specifically was considered, the average was lower at 27.3%.

The average time spent targeting Channel Catfish was much lower on the Otter Tail River, as the average for all anglers was 11.1%. Anglers who were only targeting catfish had a higher average percentage at 36%. Anglers who weren't targeting catfish specifically only spent 7.6% of their time targeting catfish on average.

**6. Have you ever caught a Lake Sturgeon on the Red River or any of its tributaries?**

Of the 746 people that answered this question at Red River sites, 666 (89.3%) had not caught a sturgeon, whereas 80 (10.7%) people indicated that they had caught a sturgeon. Slightly more people who were fishing the Otter Tail River at Orwell Dam had caught a sturgeon. Of the 82 people that answered this question, 69 (84.1%) had not caught a sturgeon and 13 (15.9%) had caught one.

## Recommendations

The design of future creel surveys should be evaluated to address changes in angler effort on the Red River and funding reductions that have reduced the number of creel clerks used in the survey. Strategies to collect more interviews of all anglers should be evaluated.

Consideration should be given to eliminating the creel surveys on tributaries to the Red River. This survey did eliminate the Red Lake River, but retained the Otter Tail River. This freed up some time for more sampling on the northern Red River Sites. The Otter Tail River site was not sampled in relation to the angler usage received. This site was under-sampled to purposely give higher priority to Red River sites. The clerk often encountered more anglers than could be interviewed in the allocated site time frame. If this site is a priority for the Minnesota DNR in the future, perhaps it could be given its own separate survey to be conducted by local personnel. Consideration should be given to dropping the Kannowski Park site in Grand Forks, as the clerk failed to document any effort at this site in 2022. There were two other locations on the North Dakota shoreline further upstream (south) where angler effort was observed that could be investigated for future shore angling locations to include in future surveys (Caspers, personal observation). One strategy that proved successful for increasing interview numbers was the use of the creel cards and accompanying online survey. This strategy provided much of the boat angler data. In fact, only 53 boat interviews were obtained through the traditional survey methods vs. 90 boat interviews that were fully useable from the creel card survey. In total, the creel card surveys accounted for almost 63% of the fully useable boat interview data. In addition, 76 individual shore anglers used the creel card survey to update their information from incomplete to complete trips (but 4 were unusable). There were 98 completed trip shore anglers contacted via the traditional survey, so the use of the creel cards accounted for about 42% of the complete trip shore angler data. The creel card “return” rate was about 33.5% for boat parties, but only about 15.2% for shore anglers. Overall, the creel card strategy proved to be a low-cost way to increase the amount of complete trip shore and boat angler data. The return rates were not very impressive, but

perhaps this could be improved via the use of a monthly prize or some other prize scheme that would incentivize more people to complete the online survey.

The harvest of large (> 24 inches) Channel Catfish should continue to be monitored closely. Channel Catfish > about 17 inches were harvested in greater abundance than found in the targeted netting survey in 2022. More restrictive regulations may be considered if harvest of large fish becomes a concern.

Angling effort on the Red River has consistently declined in each creel survey. However, the low effort documented in this survey was likely due to the poor conditions that widespread and long-lived flooding created on the Red River in 2022.

Lake Sturgeon densities on the Red River should increase with ongoing restoration efforts. This was observed to some extent, as the estimated catch of Lake Sturgeon was higher during this survey (119 caught in Red River and 93 caught in Ottertail River) than in 2015 (27 caught in Red River and 69 caught in Ottertail River). This population may provide a unique fishing opportunity for Red River anglers if the population grows to a “fishable” level.

Walleye were the second most popular species targeted by Red River anglers. However, targeted population surveys for Walleye and other large river species other than Channel Catfish have not been established for the Red River. Effort should be made to establish standardized methods to assess other large river species such as Walleye, Sauger, and Lake Sturgeon if their populations are thought to be imperiled.

## LITERATURE CITED

- Blackwell, B.G., M. L. Brown, and B. R. Murphy. 1995. Development and evaluation of a standard weight (Ws) equation for freshwater Drum. *Prairie Naturalist* 27:51-61.
- Brooks, L. and L. Schlueter. 1999. Angler use and sport fishing catch survey on the Red River of the North, North Dakota, April 1 through May 5, 1999. North Dakota Game and Fish Department.
- Brooks, L. and L. Schueter. 2002. Angler use and sport fishing catch survey on the Red River of the North, North Dakota, March 15 through October 31, 2000. North Dakota Game and Fish Department. Bismarck, North Dakota.
- Brooks, L. and S. Gangl. 2012. Angler use and sport fishing catch survey on the Red River of the North, North Dakota, April 1 through October 31, 2010. North Dakota Game and Fish Department. Bismarck, North Dakota.
- Carlander, K.D. 1969. *Handbook of Freshwater Fishery Biology*. Iowa State University Press, Ames, Iowa.
- Kludt, N. 2023. Red River of the North Channel Catfish Population Assessment, Summer 2022. Minnesota Department of Natural Resources. Division of Fish and Wildlife.
- Koel, T.M. 1997. Distribution of fishes in the Red River of the North Basin on multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Pollock, K.H., C. M. Jones, and T. L. Brown. 1994. Angler survey methods and their application in fisheries management. *American Fisheries Society Special Publication* 25.
- Renard, P., S.R. Hanson, and J.W. Enblom. 1986. Biological survey of the Red River of the North. Minnesota Department of Natural Resources, Division of Fish and Wildlife. Special Publication No. 142.
- Schlueter, L. 1999. Red River of the North: Results of the April 1998 angler survey. Project report for the Fisheries Division. North Dakota Game and Fish Department. Bismarck, North Dakota.

Siddons, S.F. 2015. Population Dynamics and Movement of Channel Catfish in the Red River of the North. Master's Thesis, University of Nebraska, Lincoln, NE.

Topp, D. 1996. Red River of the North angler survey, 1994. Minnesota Department of Natural Resources.

Topp, D. 2003. Red River of the North creel survey, May 1 – September 30, 2001. Minnesota Department of Natural Resources.

Wendel, J. 2016. Red River of the North Channel Catfish assessment. Minnesota Department of Natural Resources.

Wendel, J. 2015. Red River of the North Creel Survey, May 1 to September 30, 2015. Minnesota Department of Natural Resources.

Figure 1. Sampling clusters for the Red River of the North creel survey. May 1 through September 30, 2022. (Red Lake River excluded from 2022 survey) (Figure re-used from Wendel, 2015)

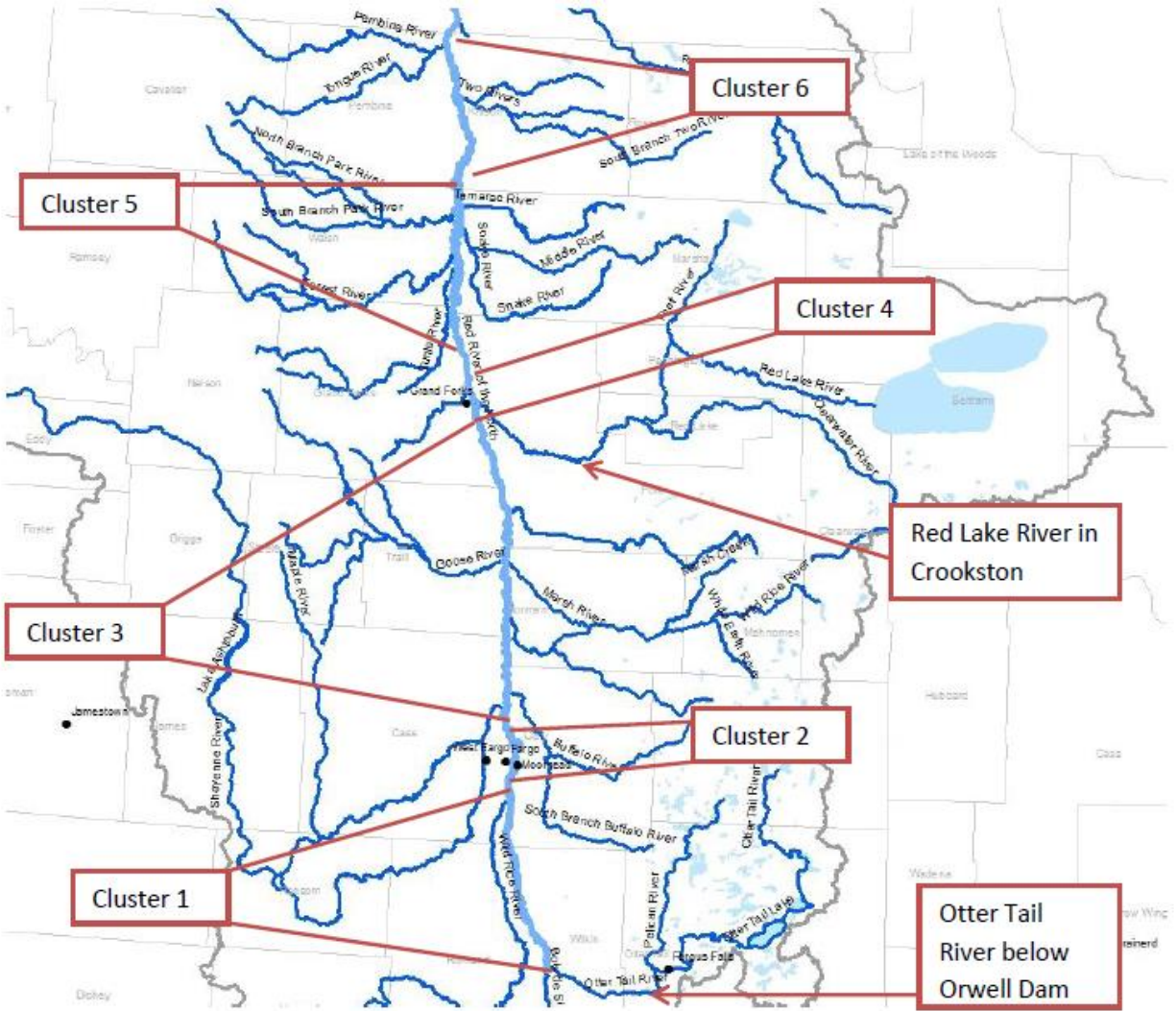


Figure 2. Cluster 1 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.

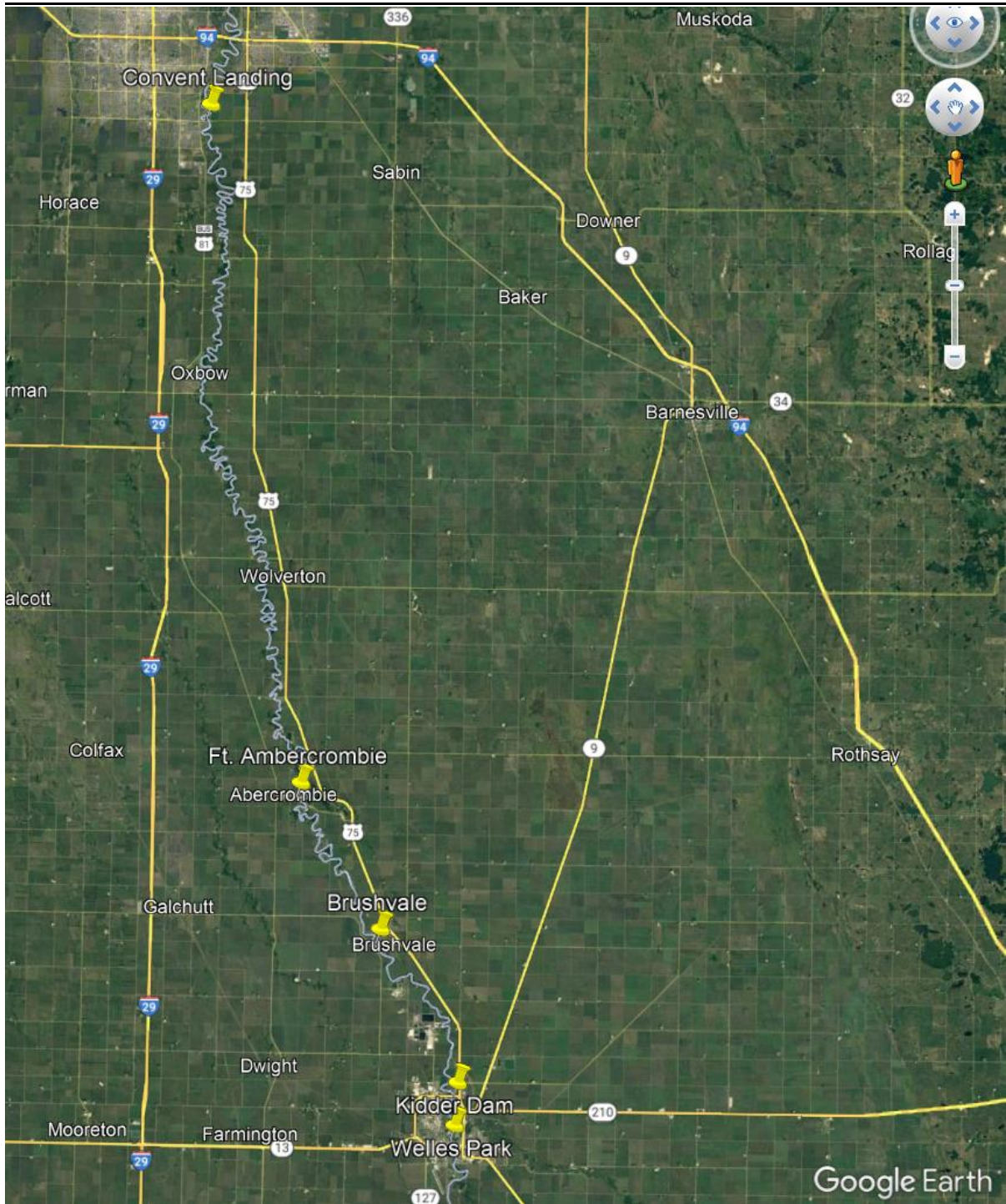


Figure 3. Cluster 2 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.

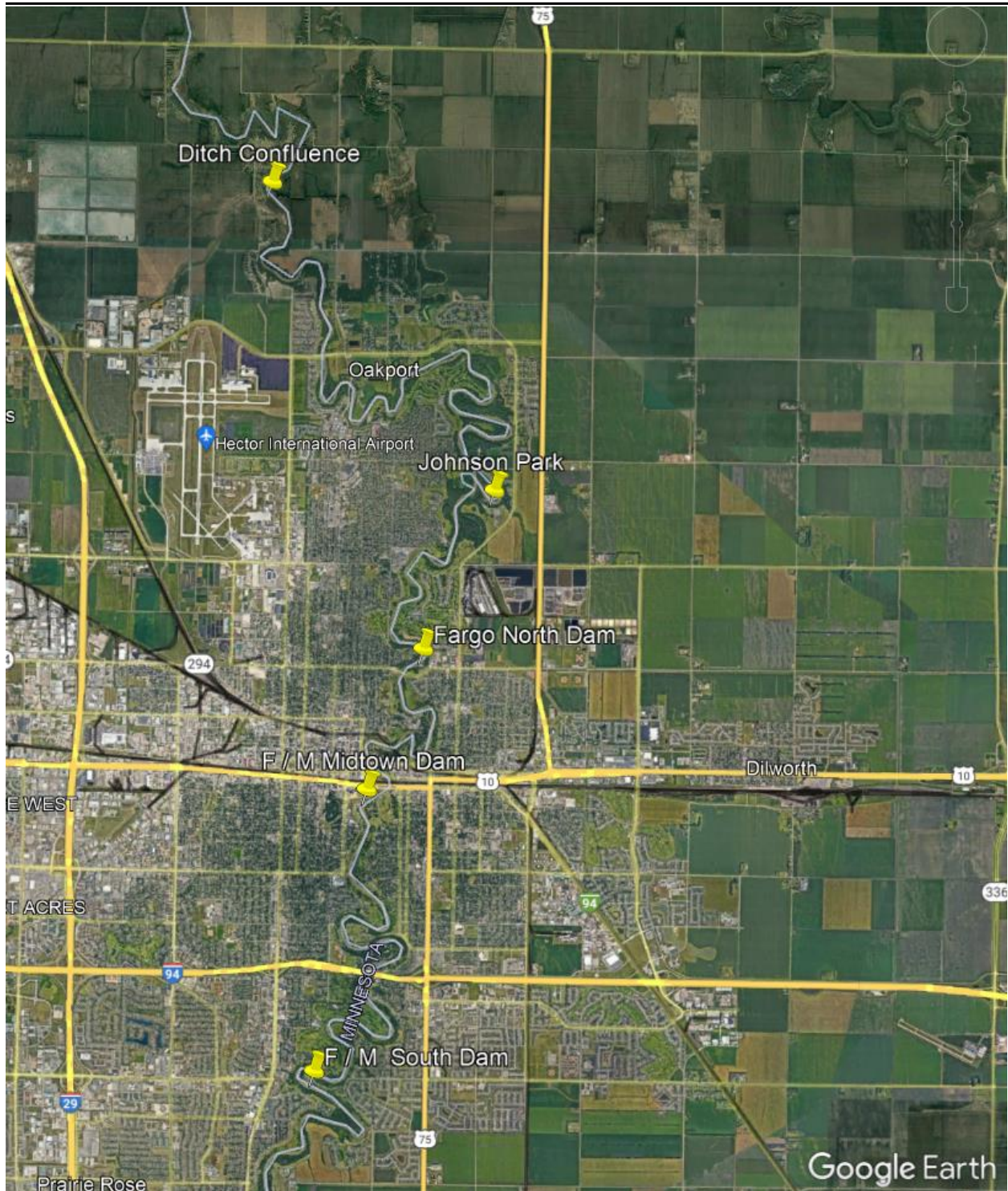




Figure 4. Cluster 3 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.

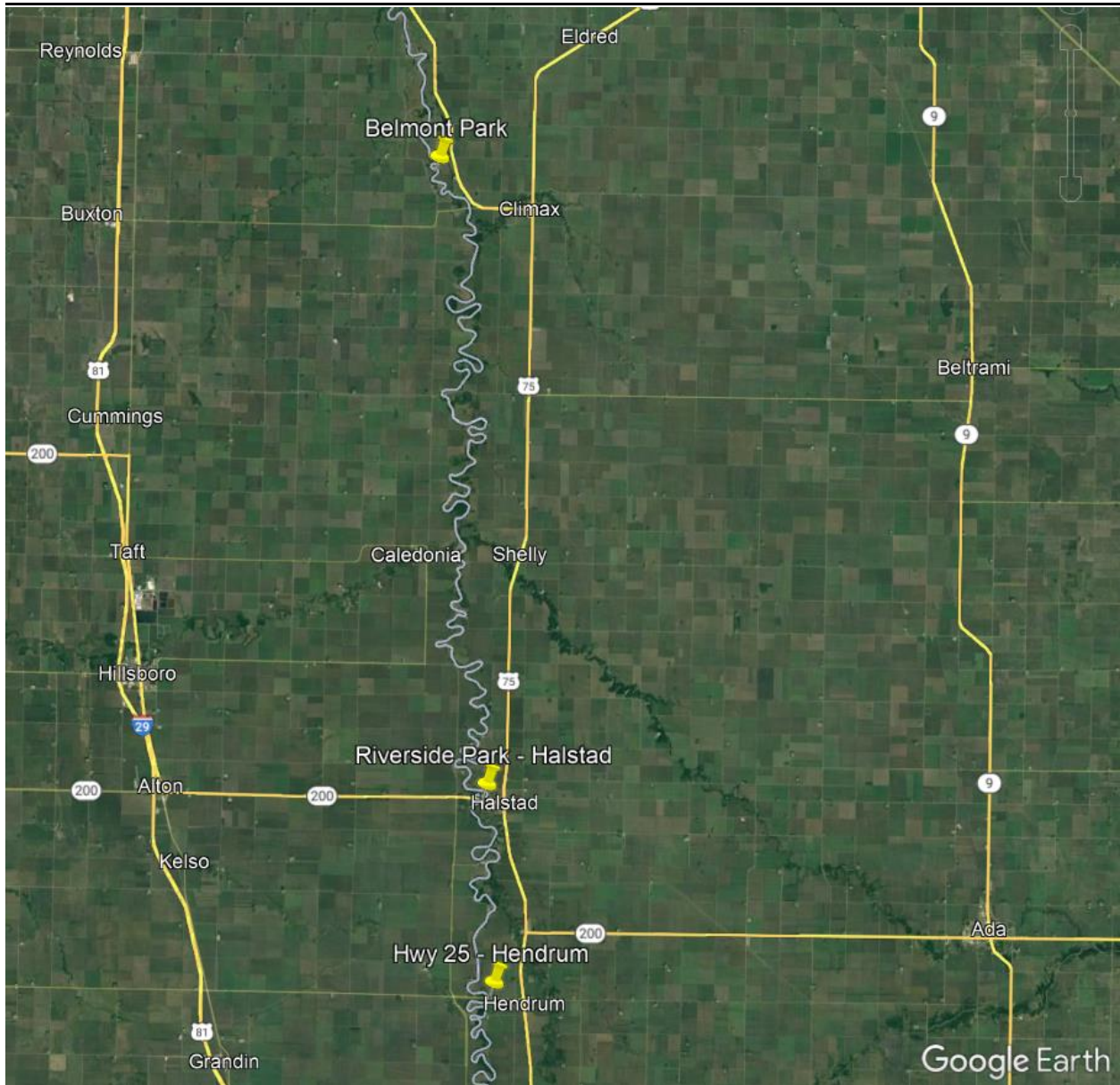


Figure 5. Cluster 4 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.

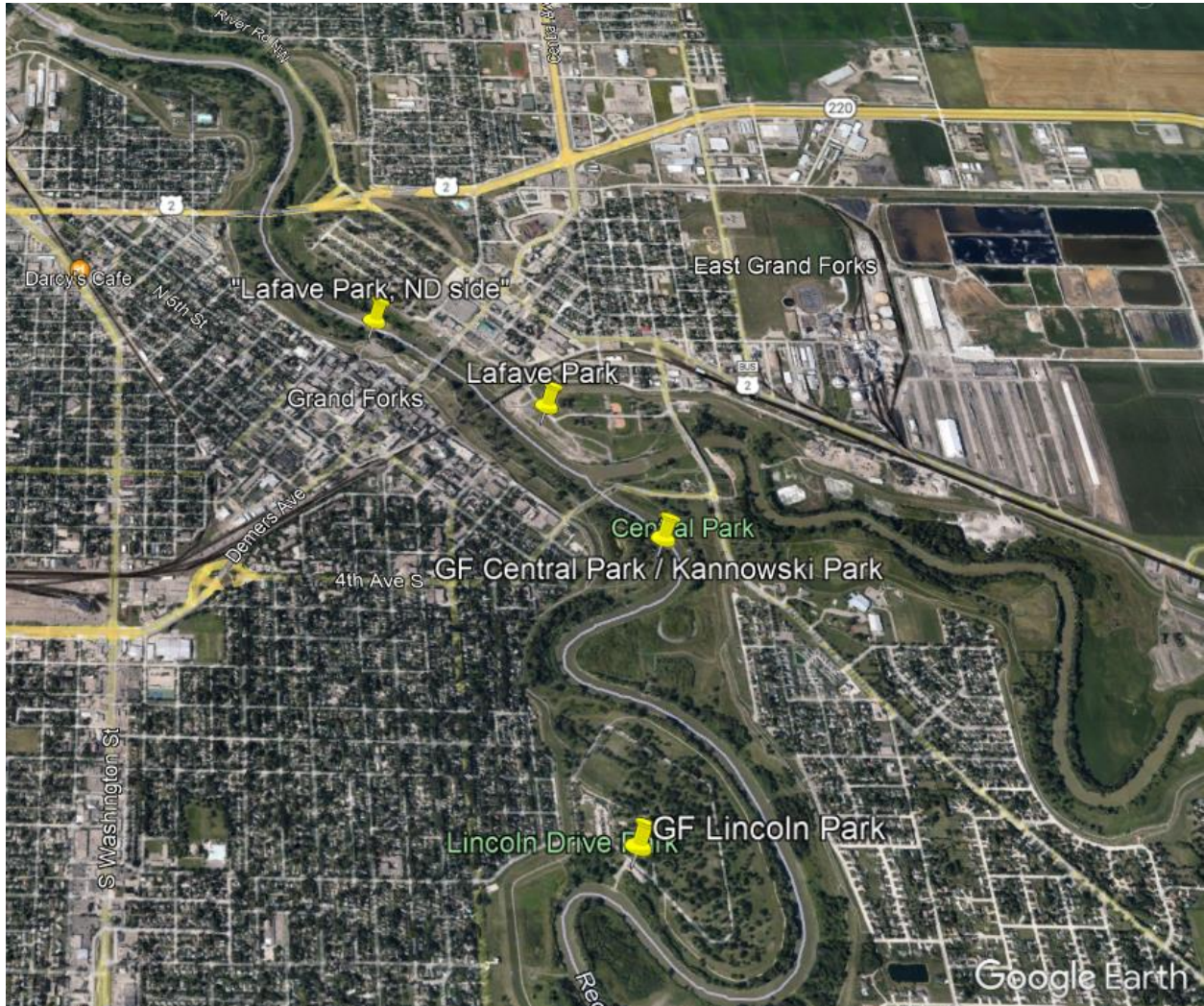


Figure 6. Cluster 5 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.

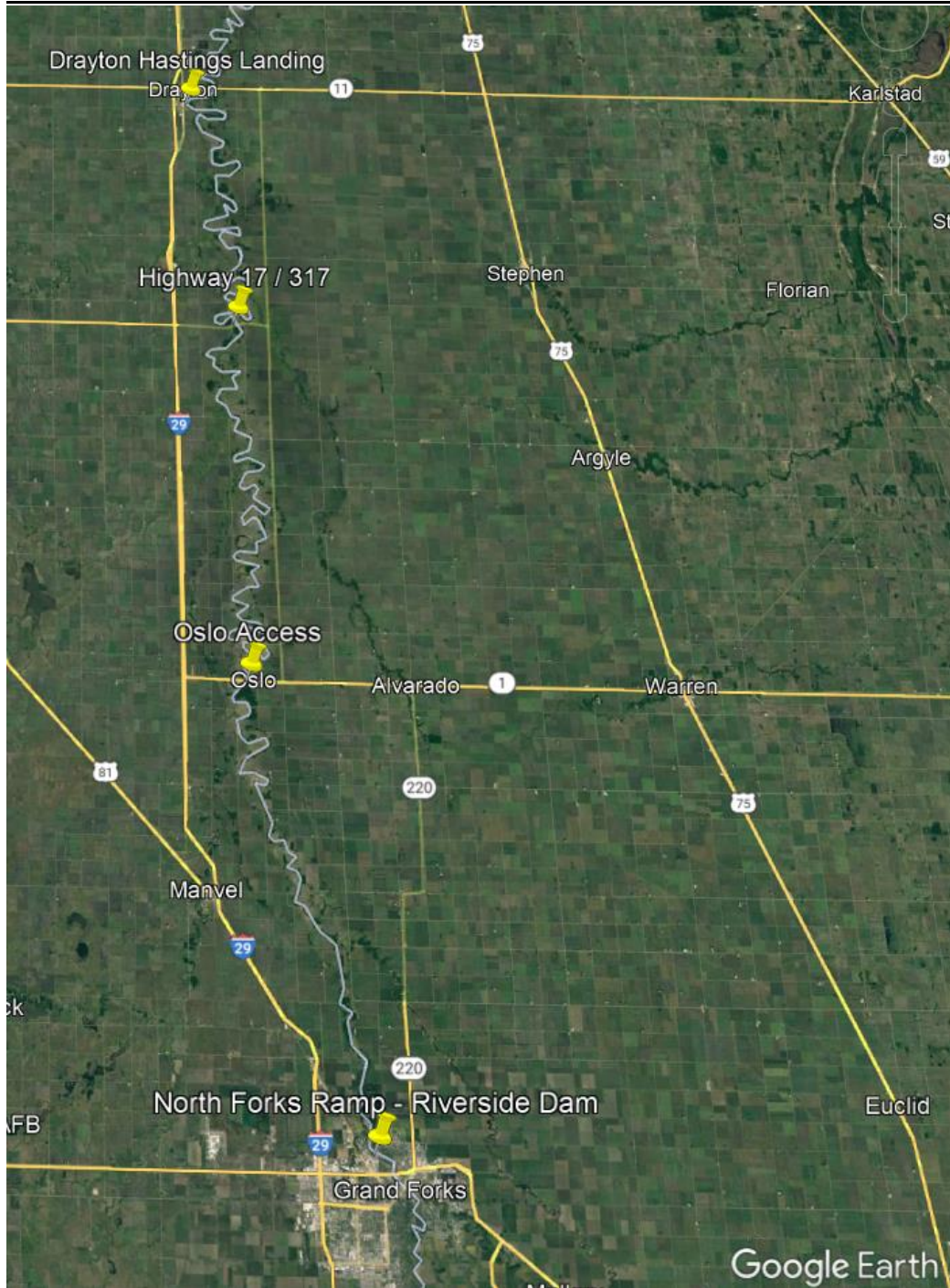


Figure 7. Cluster 6 sampling sites, Red River of the North creel survey, May 1 through September 30, 2022.

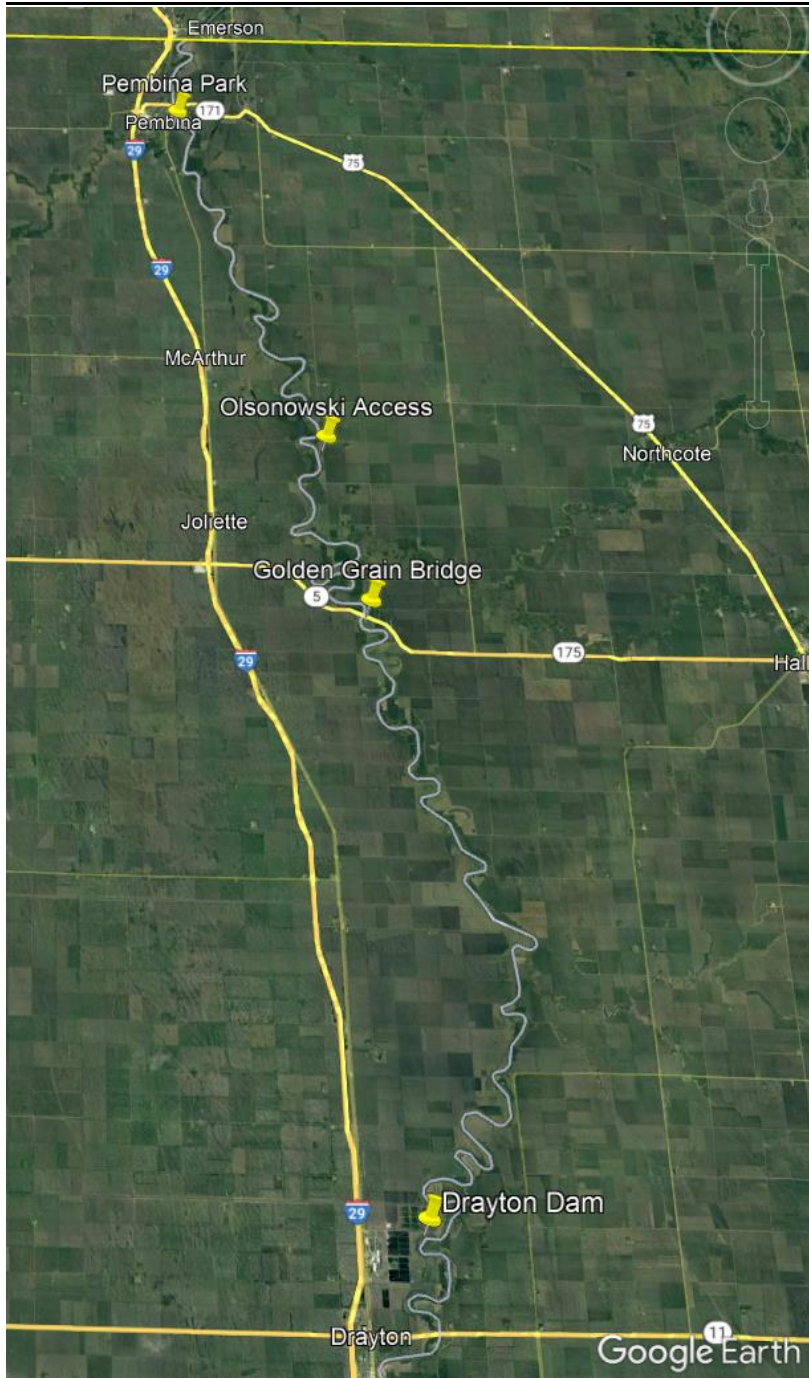


Figure 8. Orwell Dam sampling site, Red River of the North creel survey, May 1 through September 30, 2022.



Figure 9. Daily Discharge (at 12am) from four gauging stations on the Red River from April 15, through September 30, 2022.

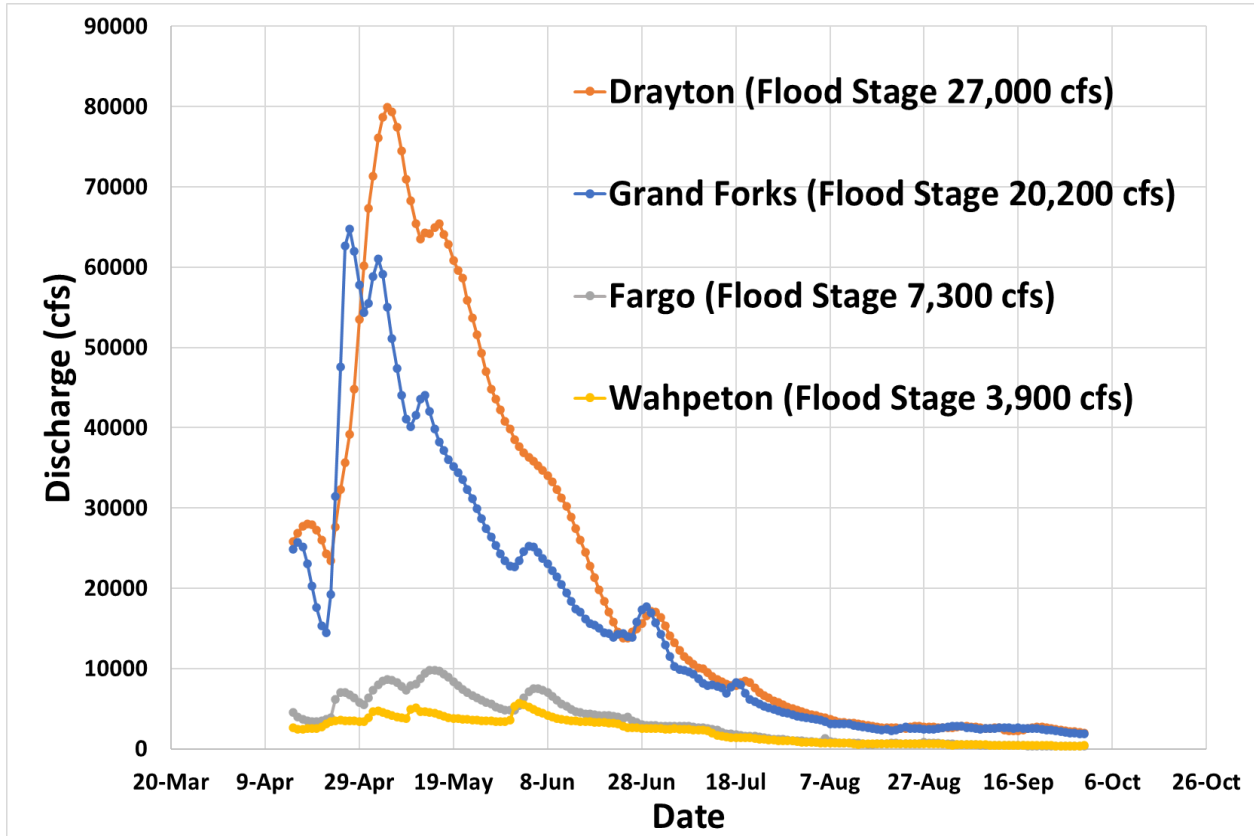


Figure 10. Length distribution of caught and harvested Channel Catfish from the Red River creel survey, May 1 through September 30, 2022. (Caught fish include both released and harvested fish)

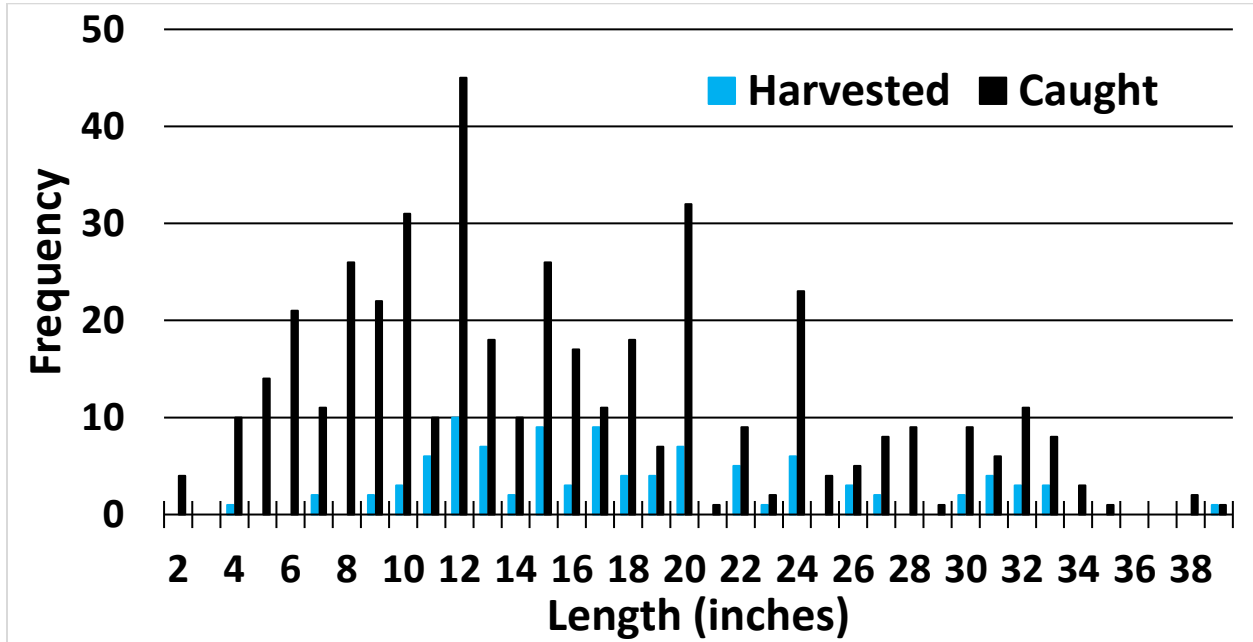


Figure 11. Length distribution of angler harvested Channel Catfish from the Red River creel survey and fish population assessment.

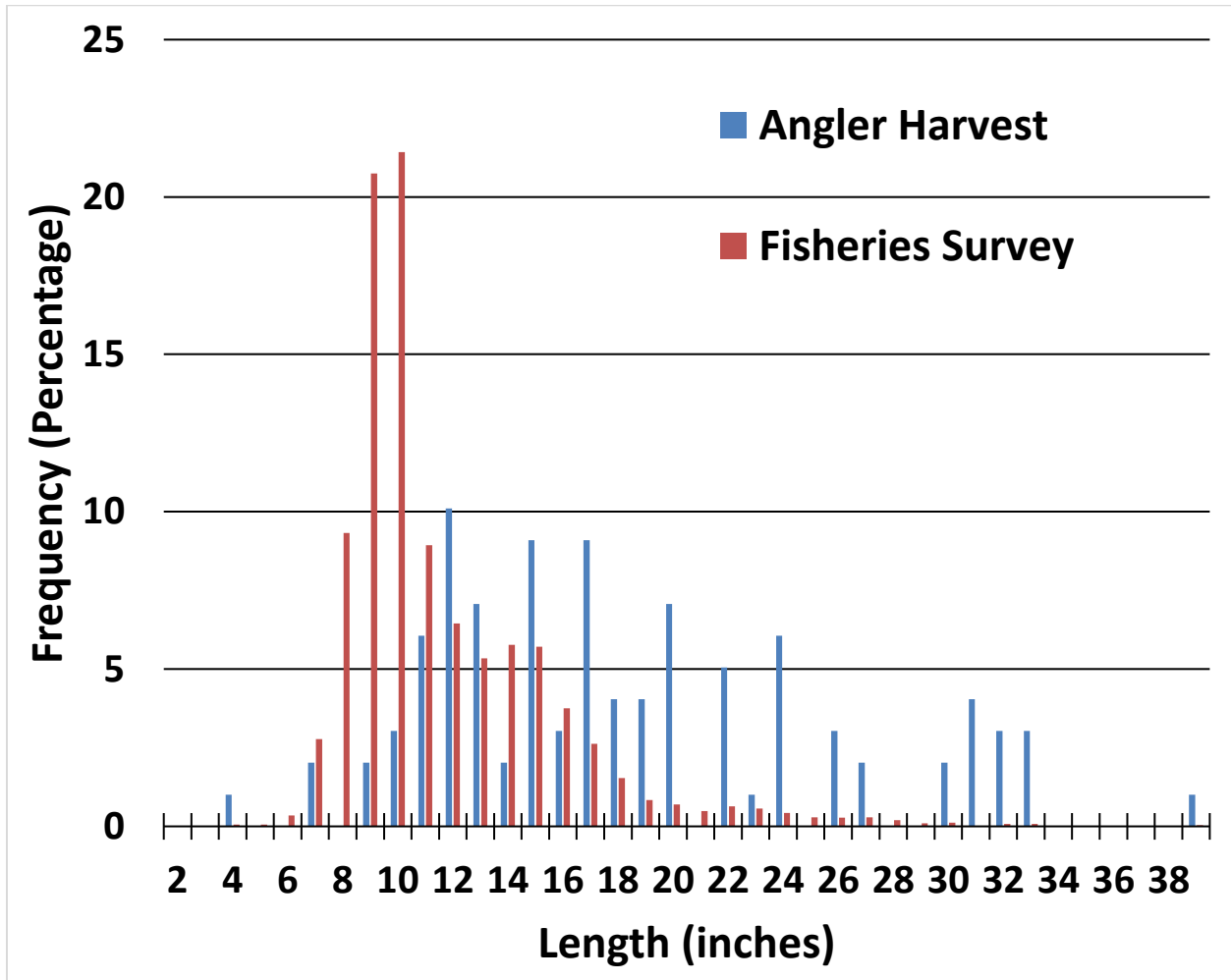




Figure 12. Length distribution of angler harvested Channel Catfish from the Red River creel survey and fish population assessment. (Only 12" and larger catfish considered)

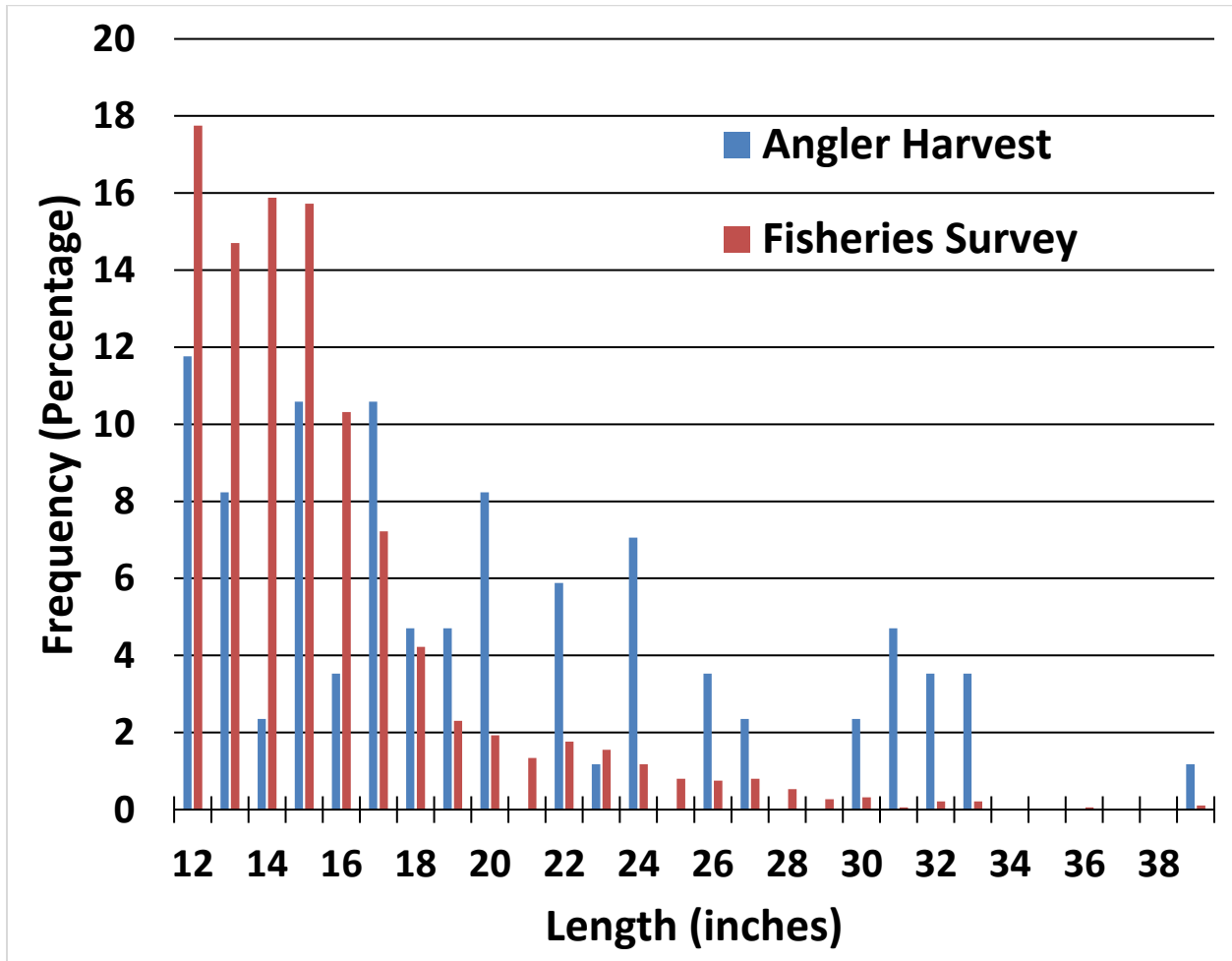


Figure 13. Length distribution of caught and harvested Walleye from the Red River creel survey, May 1 through September 30, 2022. (Caught fish include both released and harvested fish)

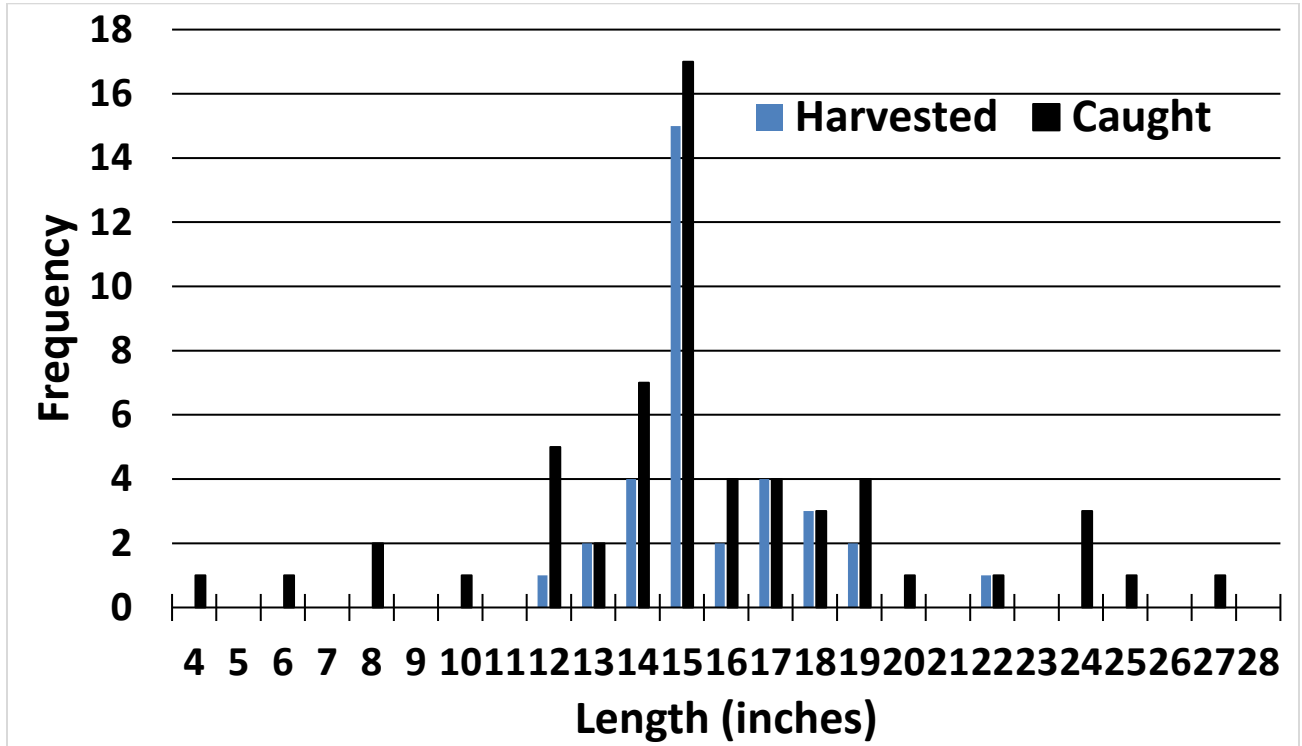


Figure 14. Length distribution of caught and harvested Sauger from the Red River creel survey, May 1 through September 30, 2022. (Caught fish include both released and harvested fish)

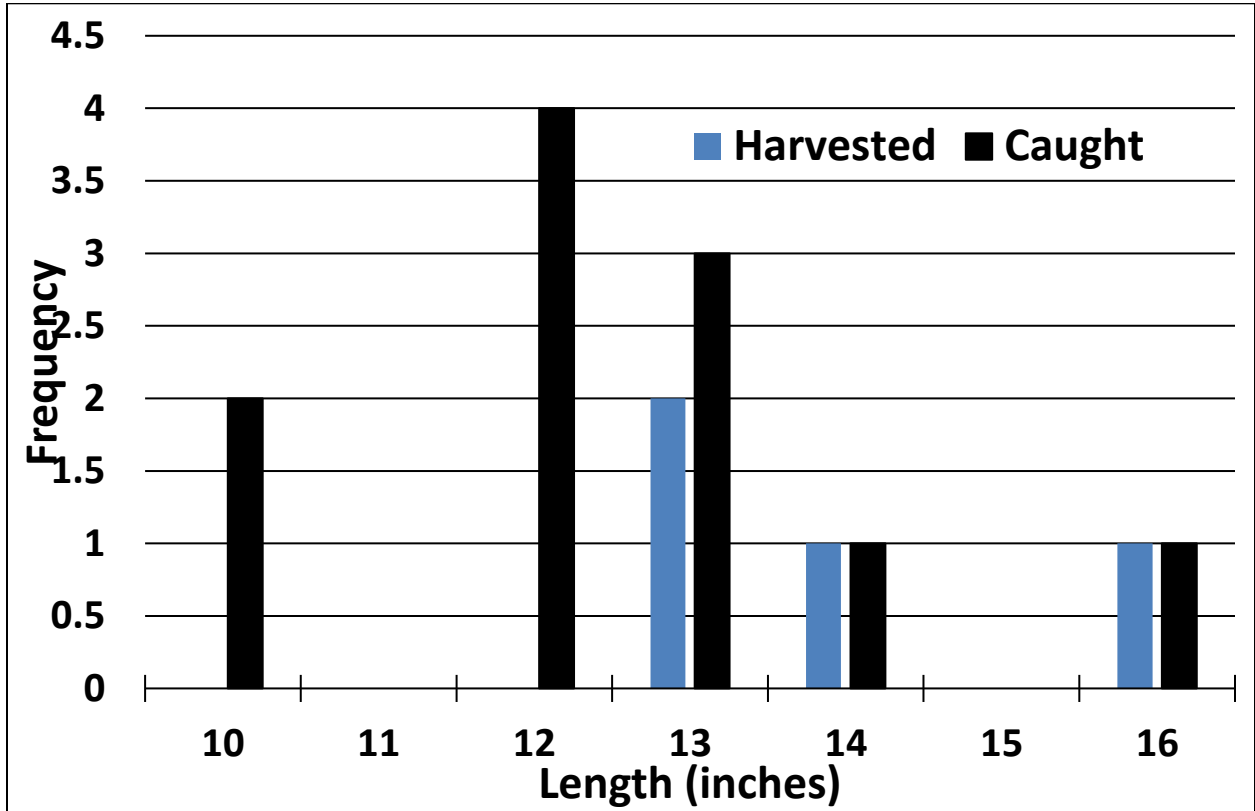


Figure 15. Length distribution of caught and harvested Channel Catfish from the Ottertail River creel survey, May 1 through September 30, 2022. (Caught fish include both released and harvested fish)

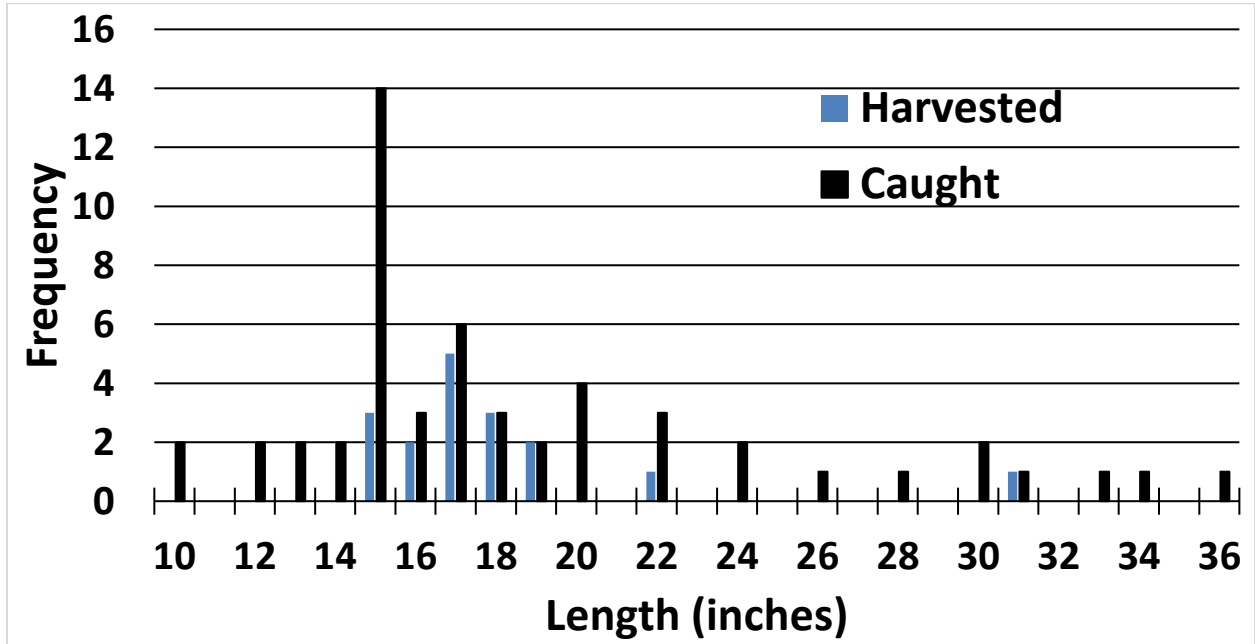


Figure 16. Length distribution of caught and harvested Walleye from the Ottetail River creel survey, May 1 through September 30, 2022. (Caught fish include both released and harvested fish)

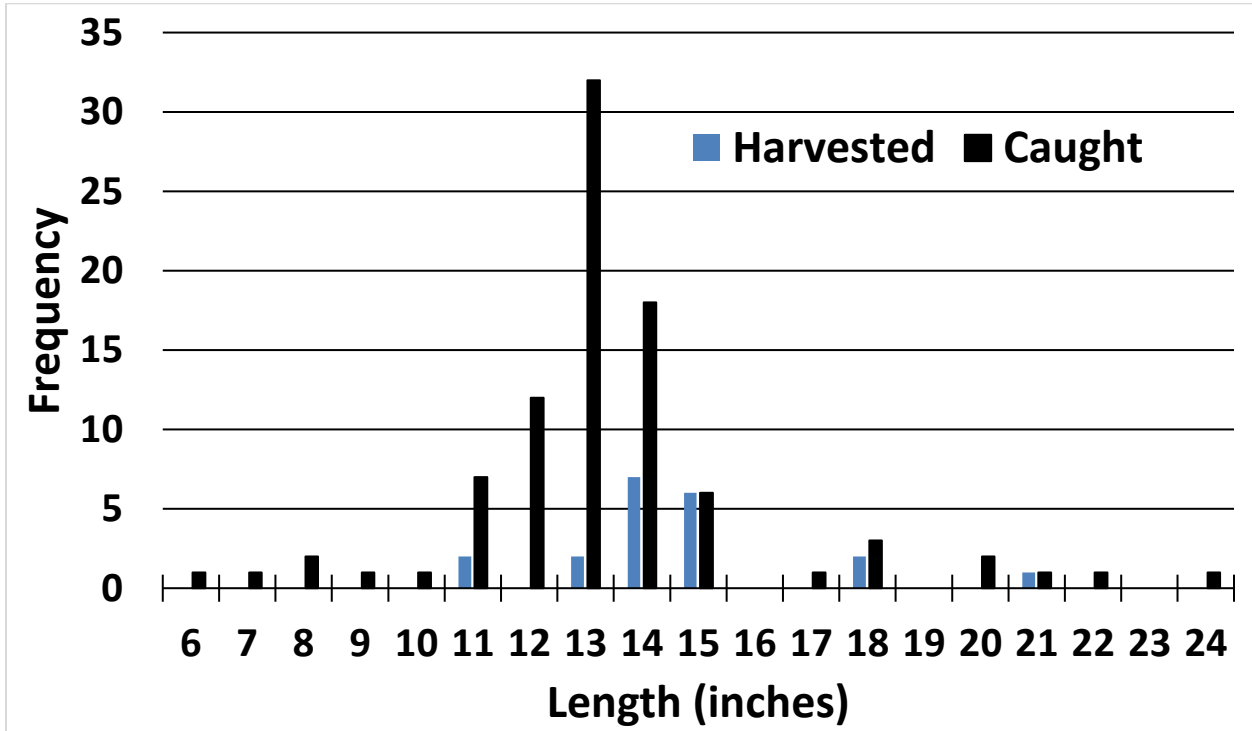


Figure 17. Length distribution of caught and harvested Smallmouth Bass from the Ottetail River creel survey, May 1 through September 30, 2022. (Caught fish include both released and harvested fish)

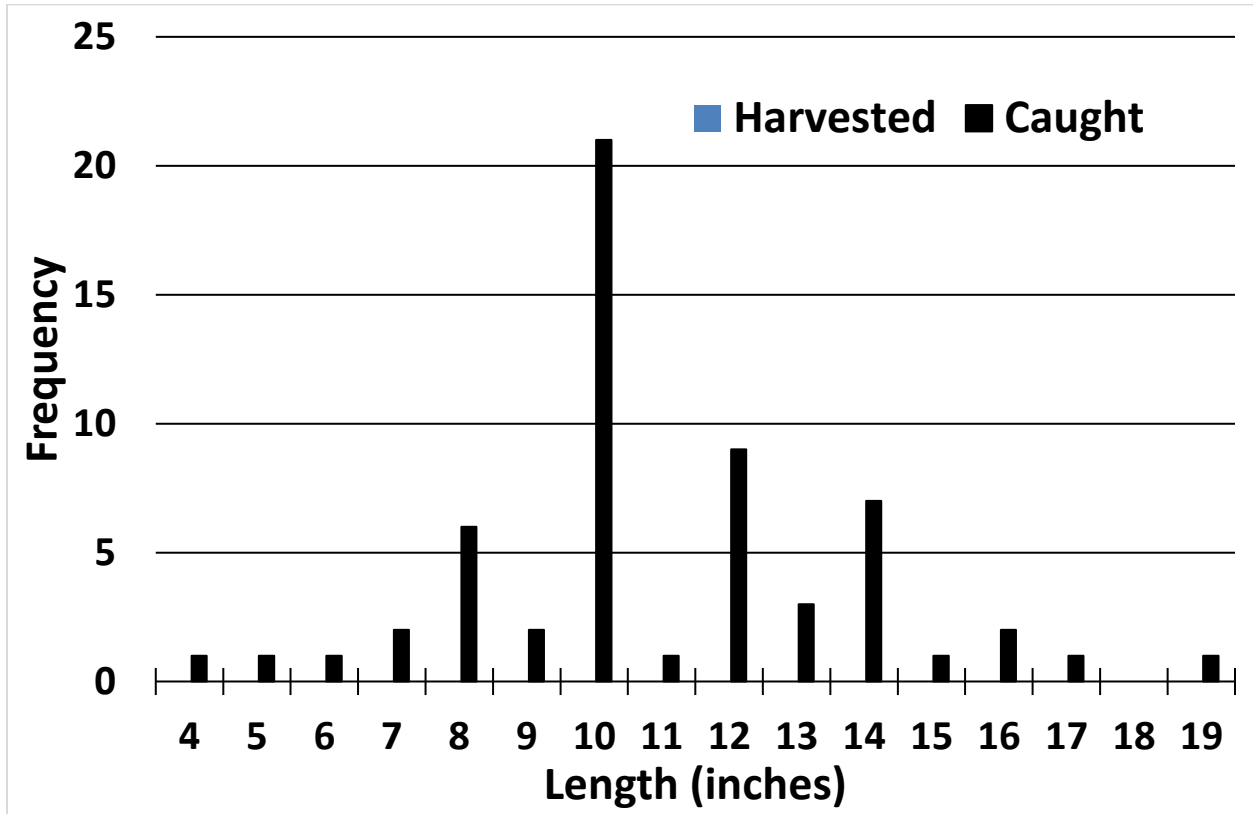


Table 1. Sampling sites included in the Red River creel survey, May 1 through September 30, 2022.

Route Number	Cluster Number	Site Number	River Mile	State (s)	Site Description
4	6	1	3	ND	Deiring Park campground and recreation area in Pembina, ND
4	6		16	MN	Olsonowski Access
4	6	5	25.5	MN, ND	Golden Grain Bridge access at State Highway 175 Crossing
4	6	17	49	ND	Drayton Dam Recreation Area
4	5	22	54.5	ND	Hastings Landing in Drayton, ND
4	5	32	81.6	MN, ND	State Highway 17/317 Crossing
3	5		116.5	MN	Oslo, MN Access Area
3	5	39	143.9	MN, ND	North Forks ramp area in Grand Forks- includes area below Riverside Dam
3	4	42	146.1	MN, ND	Lafave Park in East Grand Forks (included shore fishing access on ND side)
3	4	44	146.4	ND	Grand Forks Central/Kannowski Park
3	4	46	148.6	ND	Grand Forks Lincoln Park
3	3	55	183	ND	Belmont Park and boat access
2	3	61	225.7	MN	Riverside Park- one mile west of Halstad at State Highway 200 crossing
2	3	62.2	236.3	MN, ND	Highway 25 crossing west of Hendrum
2	2	71	285.6	ND	Ditch confluence 1.5 miles north of Highway 22 just north of Fargo
2	2	72	294.8	MN	M.B. Johnson Park in Moorhead
2	2	74	298.2	MN, ND	Fargo/Moorhead North Dam
2	2	77	301.5	MN, ND	Fargo/Moorhead Midtown Dam
2	2	79	307.4	MN	South Dam in Moorhead
1	1	81	311	MN, ND	Convent Landing on southern edge of Fargo
1	1	96	346	ND	Fort Abercrombie
1	1	98	387	ND	Brushvale Access Area - Highway 18 crossing
1	1	103	397.9	ND	Kidder Dam area in Wahpeton
1	1	105	400.4	MN	Welles Park area in Breckenridge
Otter Tail River		110	OTR 40	MN	Orwell Dam

Table 2. State of residence for anglers encountered in the Red River creel survey, May 1 through September 30, 2022. (Data expressed as percentages)

<b>State</b>	<b>Red River</b>	<b>Otter Tail River</b>
Arizona	0.6	NA
California	0.1	NA
Colorado	NA	1.1
Florida	0.1	NA
Iowa	3.3	NA
Illinois	0.6	NA
Massachusetts	NA	1.1
Michigan	0.6	NA
Minnesota	24.8	77.4
Missouri	0.6	1.1
Montana	0.1	1.1
North Dakota	65.7	14.0
Nebraska	0.3	NA
Nevada	NA	1.1
Ohio	0.1	NA
Pennsylvania	0.2	NA
South Dakota	0.7	NA
Texas	0.1	NA
Washington	0.2	NA
Wisconsin	1.5	3.2
Canada	0.1	NA
South Africa	0.2	NA



Table 3. Species preference from anglers encountered in the Red River creel survey, May 1 through September 30, 2022. (Data expressed as percentages)

<b>Primary Species</b>	<b>Combined</b>	<b>Boat</b>	<b>Shore</b>
Anything	14.0	3.6	18.8
Channel Catfish	68.7	92.5	57.8
Catfish/Walleye	2.5	1.2	3.0
Walleye	8.0	1.5	10.9
Sauger	0.0	0.0	0.0
Walleye/Sauger	1.0	1.2	1.0
Goldeye	1.6	0.0	2.4
Catfish/Goldeye	0.6	0.0	0.8
Smallmouth Bass (and combos)	1.8	0.0	2.6
Northern Pike (and combos)	0.8	0.0	1.1
Panfish	0.2	0.0	0.3
Carp (and combos)	0.5	0.0	0.7
Other	0.4	0.0	0.6
n	1055	333	722

Table 4. Monthly angling effort (standard error) by angler type and sampling cluster, from the Red River creel survey, May 1 through September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Shore	Boat	Shore	Boat	Shore	Boat	Shore	Boat	Shore	Boat	Shore	Boat
1	696 (228)	91 (91)	1,024 (390)	433 (306)	2,076 (464)	2,129 (589)	940 (357)	2,149 (1,302)	1,586 (341)	667 (212)	6,322 (814)	5,469 (1,480)
2	305 (155)	0 (0)	1,648 (386)	0 (0)	2,411 (505)	1,836 (577)	4,274 (936)	1,105 (445)	2,088 (330)	607 (202)	10,726 (1,189)	3,548 (756)
3	84 (84)	122 (122)	0 (0)	240 (173)	271 (140)	194 (194)	233 (170)	552 (240)	274 (132)	495 (236)	862 (270)	1,603 (442)
4	0 n/a	0 n/a	1,056 (380)	428 (428)	1,936 (662)	1,863 (967)	1,720 (445)	2,067 (313)	787 (252)	1,629 (526)	5,499 (919)	5,987 (1,222)
5	0 n/a	0 n/a	373 (174)	1,001 (867)	1,344 (302)	3,742 (1,425)	1,725 (546)	3,110 (1,175)	509 (166)	1,642 (380)	3,951 (669)	9,495 (2,075)
6	0 n/a	0 n/a	43 (43)	97 (97)	1,084 (421)	256 (185)	2,539 (666)	3,169 (959)	1,488 (352)	919 (332)	5,154 (864)	4,441 (1,036)
Red River Total	1,085 (288)	213 (152)	4,144 (691)	2,199 (1,034)	9,122 (1,094)	10,020 (1,928)	11,431 (1,404)	12,152 (2,085)	6,732 (676)	5,959 (820)	32,514 (2,046)	30,543 (3,135)
Ottertail River (Orwell Dam)	2,520 (1,124)	0 (0)	976 (474)	0 (0)	2,892 (856)	0 (0)	2,372 (608)	0 (0)	1,528 (273)	0 (0)	10,288 (1,632)	0 (0)

Table 5. Monthly total angling effort (standard error) by sampling cluster from the Red River creel survey, May 1 through September 30, 2022.

Cluster	May	June	July	August	September	Total
1	787 (245)	1,457 (496)	4,205 (749)	3,089 (1,350)	2,253 (401)	11,791 (1,689)
2	305 (155)	1,648 (386)	4,247 (766)	5,379 (1,036)	2,695 (387)	14,274 (1,409)
3	206 (148)	240 (173)	465 (239)	785 (294)	769 (270)	2,465 (518)
4	0 n/a	1,484 (572)	3,799 (1,171)	3,787 (544)	2,416 (584)	11,486 (1,529)
5	0 n/a	1,374 (885)	5,086 (1,457)	4,835 (1,296)	2,151 (414)	13,446 (2,181)
6	0 n/a	140 (107)	1,340 (460)	5,708 (1,168)	2,407 (484)	9,595 (1,350)
Red River Total	1,298 (326)	6,343 (1,244)	19,142 (2,216)	23,583 (2,514)	12,691 (1,063)	63,057 (3,744)
Ottertail River (Orwell Dam)	2,520 (1,124)	976 (474)	2,892 (856)	2,372 (608)	1,528 (273)	10,288 (1,632)

Table 6. Summary of historical angling effort from Red River creel surveys, 1994-2022.

---

Year	Months	Shore Effort	Boat Effort	Total Effort	Total Effort/Month
1994	4.2	114,008	47,715	159,723	38,029
2000	5	88,856	67,303	156,159	31,232
2001	5	64,630	44,552	108,182	21,636
2010	5	57,159	54,413	111,572	22,314
2015	5	42,012	46,848	88,860	17,772
2022	5	32,514	30,543	63,057	12,611

Table 7. Channel Catfish catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	115	0	478	0	8,617	151	1,319	182	768	45	11,297	378
2	0	0	903	0	3,266	673	4,598	68	1,048	173	9,815	913
3	0	0	400	80	572	174	752	360	677	0	2,401	614
4	0	0	1,880	320	1,429	0	2,386	211	1,253	16	6,949	547
5	0	0	1,781	0	2,638	337	2,345	195	1,415	32	8,179	564
6	0	0	280	280	677	186	4,120	738	1,045	147	6,122	1,352
Total Red River	115	0	5,723	680	17,200	1,522	15,520	1,753	6,206	413	44,764	4,368
Otter Tail River	0	0	614	140	1,802	222	435	79	396	680	3,531	838

Table 8. Summary of historical gamefish catch and harvest during Red River creel surveys, 2001-2022.

Year	Channel Catfish			Walleye			Sauger			Northern Pike		
	Catch (Rate)	Harvest (Rate)	Pounds (Mean Weight)	Catch (Rate)	Harvest (Rate)	Pounds (Mean Weight)	Catch (Rate)	Harvest (Rate)	Pounds (Mean Weight)	Catch (Rate)	Harvest (Rate)	Pounds (Mean Weight)
2022	44,764 (0.65)	4,368 (0.07)	14,975 (3.4)	3,585 (0.05)	1,820 (0.02)	2,498 (1.4)	889 (0.02)	231 (0.005)	202 (0.9)	975 (0.01)	0 (0.0)	0 NA
2015	44,721 (0.44)	6868 (0.08)	35,343 (5.1)	2,826 (0.09)	769 (0.02)	850 (1.1)	4,117 (0.03)	895 (0.01)	604 (0.67)	846 NA	53 NA	306 (5.8)
2010	35,688 (0.32)	6,866 (0.07)	NA NA	2,086 NA	1,058 NA	NA NA	1,323 NA	823 NA	NA NA	1,017 NA	77 NA	NA NA
2001	NA NA	11,747 NA	42,981 (4.1)	NA NA	919 NA	2,214 (2.4)	NA NA	3,671 NA	2,106 (0.57)	NA NA	484 NA	2,946 (6.1)

Table 9. Estimated numbers and pounds of gamefish harvested by anglers during the Red River creel survey, May 1 to September 30, 2022.

Cluster	Channel Catfish		Walleye		Sauger		Smallmouth Bass		Northern Pike	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1	378	1,296	908	1,246	0	0	120	113	0	0
2	913	3,130	365	501	34	30	64	60	0	0
3	614	2,105	0	0	0	0	0	0	0	0
4	547	1,875	0	0	0	0	0	0	0	0
5	564	1,934	467	641	0	0	121	114	0	0
6	1,352	4,635	79	108	197	172	0	0	0	0
Total Red River	4,368	14,974	1,820	2,498	231	202	305	288	0	0
Otter Tail River	838	1,898	1,646	1,877	0	0	0	0	0	0

Table 10. Channel Catfish catch and harvest rates (fish/hour), by sampling cluster and month. Red River Creel Survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Average	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0.147	0.000	0.328	0.000	2.049	0.036	0.427	0.059	0.341	0.020	0.658	0.023
2	0.000	0.000	0.548	0.000	0.769	0.158	0.855	0.013	0.389	0.064	0.512	0.047
3	0.000	0.000	1.667	0.333	1.229	0.375	0.958	0.458	0.881	0.000	0.947	0.233
4	0.000	0.000	1.267	0.216	0.376	0.000	0.630	0.056	0.519	0.007	0.558	0.056
5	0.000	0.000	1.297	0.000	0.519	0.066	0.485	0.040	0.658	0.015	0.592	0.024
6	0.000	0.000	2.000	2.000	0.505	0.139	0.722	0.129	0.434	0.061	0.732	0.466
Average Red River	0.025	0.000	1.185	0.425	0.908	0.129	0.680	0.126	0.537	0.028	0.667	0.142
Otter Tail River	0.000	0.000	0.629	0.144	0.623	0.077	0.183	0.033	0.445	0.259	0.376	0.103



Table 11. Walleye catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	158	9	0	0	210	168	127	0	1,343	732	1,839	908
2	0	0	0	0	96	27	418	203	314	135	828	365
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	11	0	11	0
5	0	0	0	0	5	0	502	349	294	120	801	467
6	0	0	0	0	0	0	0	0	106	79	106	79
Total Red River	158	9	0	0	311	195	1,047	552	2,069	1,065	3,585	1,820
Otter Tail River	2,910	372	116	372	1,001	371	514	277	510	785	5,582	1,646

Table 12. Sauger catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	27	0	0	0	0	0	0	0	27	0
2	0	0	0	0	49	0	34	34	0	0	83	34
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	311	0	0	0	10	0	321	0
6	0	0	0	0	0	0	0	0	458	197	458	197
Total Red River	0	0	27	0	361	0	34	34	467	197	889	231
Otter Tail River	0	0	0	0	0	0	0	0	0	0	0	0

Table 13. Lake Sturgeon catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	109	0	10	0	0	0	119	0
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	0	0	0	0	109	0	10	0	0	0	119	0
Otter Tail River	0	0	19	0	74	0	0	0	0	0	93	0

Table 14. Goldeye catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	55	0	54	0	3,678	42	565	316	702	273	5,055	630
2	0	0	240	132	953	181	2,318	398	1,910	603	5,422	1,314
3	0	0	0	0	0	0	65	0	9	0	75	0
4	0	0	208	156	37	0	66	19	19	0	329	175
5	0	0	229	115	3,357	2,993	412	115	604	478	4,602	3,700
6	0	0	0	0	35	0	388	110	741	341	1,165	452
Total Red River	55	0	731	403	8,060	3,216	3,814	958	3,985	1,695	16,646	6,272
Otter Tail River	0	0	153	0	6,125	0	217	0	145	0	6,641	0

Table 15. Freshwater Drum catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	217	0	0	0	449	0	0	0	348	0	1,014	0
2	0	0	33	33	272	0	254	0	107	64	666	97
3	0	0	0	0	39	39	0	0	0	0	39	39
4	0	0	16	0	27	0	70	5	42	0	155	5
5	0	0	0	0	140	0	134	0	46	0	320	0
6	0	0	0	0	37	0	169	0	131	11	337	11
Total Red River	217	0	49	33	963	39	627	5	674	76	2,531	152
Otter Tail River	0	0	909	0	3,993	0	1,326	99	957	0	7,184	99

Table 16. Smallmouth Bass catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	149	0	0	0	378	0	1,187	0	495	120	2,210	120
2	0	0	16	0	20	0	508	0	607	64	1,152	64
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	31	0	0	0	31	0
5	0	0	0	0	5	0	1,907	121	151	0	2,063	121
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	149	0	16	0	403	0	3,633	121	1,253	184	5,455	305
Otter Tail River	1,088	0	1,219	0	779	0	1,340	0	338	0	4,764	0

Table 17. Crappie catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	168	0	0	0	47	47	215	47
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	0	0	0	0	168	0	0	0	47	47	215	47
Otter Tail River	32	0	52	25	482	0	196	0	0	0	762	25

Table 18. Bullhead species catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	561	0	0	0	0	0	561	0
2	0	0	52	26	696	0	714	220	359	0	1,821	246
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	49	0	190	14	15	15	253	29
5	0	0	0	0	104	0	20	0	0	0	124	0
6	0	0	23	0	0	0	424	103	0	0	447	103
Total Red River	0	0	75	26	1,410	0	1,348	337	374	15	3,206	378
Otter Tail River	0	0	0	0	0	0	0	0	0	0	0	0



Table 19. Common Carp catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	31	0	0	0	35	0	0	0	0	0	66	0
2	0	0	0	0	24	0	55	0	0	0	78	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	73	73	0	0	76	76	149	149
5	0	0	0	0	104	104	0	0	0	0	104	104
6	0	0	0	0	0	0	0	0	43	34	43	34
Total Red River	31	0	0	0	236	177	55	0	119	110	440	287
Otter Tail River	194	0	0	0	161	0	166	42	0	0	521	42

Table 20. Mooneye catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	274	220	0	0	274	220
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	0	0	0	0	0	0	274	220	0	0	274	220
Otter Tail River	0	0	0	0	0	0	0	0	0	0	0	0

Table 21. Northern Pike catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	46	0	0	0	0	0	363	0	0	0	409	0
2	0	0	0	0	0	0	203	0	128	0	331	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	25	0	25	0
5	0	0	0	0	0	0	0	0	43	0	43	0
6	0	0	0	0	0	0	0	0	167	0	167	0
Total Red River	46	0	0	0	0	0	566	0	363	0	975	0
Otter Tail River	242	0	40	0	0	0	64	0	366	0	711	0

Table 22. Redhorse species catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	31	0	0	0	117	0	0	0	0	0	148	0
2	0	0	0	0	0	0	27	27	270	270	297	297
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	23	0	0	0	0	0	0	0	23	0
Total Red River	31	0	23	0	117	0	27	27	270	270	468	297
Otter Tail River	323	194	23	0	0	0	125	125	364	0	835	319

Table 23. Rock Bass catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	336	0	0	0	47	47	383	47
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	205	0	205	0
Total Red River	0	0	0	0	336	0	0	0	252	47	588	47
Otter Tail River	0	0	0	0	0	0	0	0	50	0	50	0

Table 24. Stonecat catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	79	0	0	0	0	0	79	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	35	0	0	0	0	0	76	0	111	0
5	0	0	0	0	52	0	64	0	0	0	116	0
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	0	0	35	0	131	0	64	0	76	0	306	0
Otter Tail River	0	0	0	0	0	0	0	0	0	0	0	0

Table 25. White Bass catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	0	0	0	0	516	31	516	31
2	0	0	0	0	0	0	110	0	0	0	110	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	0	0	0	0	0	0	110	0	516	31	626	31
Otter Tail River	0	0	0	0	0	0	933	0	0	0	933	0

Table 26. White Sucker catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	55	0	0	0	55	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	74	74	74	74
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	17	0	0	0	17	0
Total Red River	0	0	0	0	0	0	72	0	74	74	146	74
Otter Tail River	162	0	29	0	0	0	0	0	0	0	191	0



Table 27. Yellow Perch catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	0	0	0	0	0	0	0	0	0	0	0	0
Otter Tail River	0	0	0	0	0	0	0	0	0	0	0	0

Table 28. Bigmouth Buffalo catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	62	0	0	0	0	0	0	0	0	0	62	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	62	0	0	0	0	0	0	0	0	0	62	0
Otter Tail River	70	0	0	0	0	0	329	0	0	0	399	0

Table 29. Bluegill catch and harvest estimates (number of fish), by sampling cluster and month. Red River creel survey, May 1 to September 30, 2022.

Cluster	May		June		July		August		September		Total	
	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest	Catch	Harvest
1	0	0	0	0	3,028	505	0	0	0	0	3,028	505
2	0	0	157	0	472	0	220	0	0	0	849	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
Total Red River	0	0	157	0	3,500	505	220	0	0	0	3,877	505
Otter Tail River	0	0	75	0	0	0	83	0	83	0	241	0

Table 30. Estimated numbers and pounds of nongame fish harvested by anglers during the Red River creel survey, May 1 to September 30, 2022.

Cluster	Common Carp		Freshwater Drum		Goldeye	
	Number	Pounds	Number	Pounds	Number	Pounds
1	0	0	0	0	630	354
2	0	0	97	133	1,314	739
3	0	0	39	54	0	0
4	149	429	5	7	175	98
5	104	299	0	0	3,700	2,081
6	34	98	11	15	452	254
Total Red River	287	826	152	209	6,272	3,528
Otter Tail River	42	185	99	124	0	0

Table 31. Estimated Catch, Percentage of Catch, Harvest, and Percentage of Harvest by anglers during the Red River creel survey, May 1 to September 30, 2022.

Species	Catch	Percent of Catch	Harvest	Percent of Harvest
Channel Catfish	44,764	52.6	4,368	29.1
Walleye	3,585	4.2	1,820	12.1
Sauger	889	1.0	231	1.5
Smallmouth Bass	5,455	6.4	305	2.0
Pike	975	1.1	0	0.0
Lake Sturgeon	119	0.1	0	0.0
Goldeye	16,646	19.5	6,272	41.7
Drum	2,531	3.0	152	1.0
Crappie	215	0.3	47	0.3
Bullhead	3,206	3.8	378	2.5
Carp	440	0.5	287	1.9
Mooneye	274	0.3	220	1.5
Redhorse	468	0.5	297	2.0
Rock Bass	588	0.7	47	0.3
Stonecat	306	0.4	0	0.0
White Bass	626	0.7	31	0.2
White Sucker	146	0.2	74	0.5
Bigmouth Buffalo	62	0.1	0	0.0
Bluegill	3,877	4.6	505	3.4
Total	85,172		15,034	

Table 32. Estimated Catch, Percentage of Catch, Harvest, and Percentage of Harvest by anglers during the Otter Tail River creel survey, May 1 to September 30, 2022.

Species	Catch	Percent of Catch	Harvest	Percent of Harvest
Channel Catfish	3,531	10.9	838	28.2
Walleye	5,582	17.2	1,646	55.4
Sauger	0	0.0	0	0.0
Smallmouth Bass	4,764	14.7	0	0.0
Pike	711	2.2	0	0.0
Lake Sturgeon	93	0.3	0	0.0
Goldeye	6,641	20.5	0	0.0
Drum	7,184	22.1	99	3.3
Crappie	762	2.3	25	0.8
Bullhead	0	0.0	0	0.0
Carp	521	1.6	42	1.4
Mooneye	0	0.0	0	0.0
Redhorse	835	2.6	319	10.7
Rock Bass	50	0.2	0	0.0
Stonecat	0	0.0	0	0.0
White Bass	933	2.9	0	0.0
White Sucker	191	0.6	0	0.0
Bigmouth Buffalo	399	1.2	0	0.0
Bluegill	241	0.7	0	0.0
Largemouth Bass	19	0.1	0	0.0
Total	32,457		2,969	

Appendix A. Creel survey schedule for Fargo Red River creel clerk, May 1 through September 30, 2022.

---

Route 1 Sites (Otter Tail River Orwell Dam site, and all Cluster 1 sites)

May           **3, 4**, 8, 12, 16, 21, **23, 28**, 30  
June           **3**, 10, 11, **13**, 18, 19, 21, **26**  
July           **1, 6**, 9, 13,16, 20, **23, 24**, 29  
August       **5, 6**, 11, 13, 14, 16, 21, **25**, 28  
September   **2, 4, 5**, 8, **13**, 17, **20**, 22, **24**, 25, **26**

Route 2 Sites (Cluster 2 sites and Halstad and Hendrum Sites from Cluster 3)

May           **2**, 7, 11, **14, 15**,19, **22, 26**  
June           2, **4, 5**, 9, **12, 14**, 20, 24, **27**  
July           **2, 4, 7**, 10, **11**, 17, **18**, 26, 30, 31  
August       4, **7**, 12, **17**, 20, **22**, 27, 31  
September   **3, 7**, 10, **11, 12**, 16, **18**, 23, 28, 29, 30

\* normal font denotes a morning shift, **bold** denotes an evening shift.

Appendix B. Creel survey schedule for Grand Forks Red River creel clerk, May 1 through September 30, 2022.

---

Route 3 Sites (Belmont Park site from Cluster 3, all Cluster 4 sites, and Riverside Park and Oslo sites from Cluster 5)

May No shifts worked due to extreme flooding.

June 11, 15, **25**, 29

July 3, **4**, 6, **14**, **16**, **21**, 23, **24**, 26,

August **4**, 6, 9, **13**, **18**, 20, **25**, **27**

September **2**, **3**, 5, **6**, 12, 15, **17**, **21**, **24**, 25, 26, 27

Route 4 Sites (Highway 17 and Drayton Hastings site from Cluster 5 and all Cluster 6 sites)

May No shifts worked due to extreme flooding.

June **12**, 14, 17, **18**, **26**, **30**

July **7**, 9, 10, **15**, **17**, **18**, **28**, 30, 31

August 2, **7**, **12**, **14**, **17**, 21, **26**, 28, 30

September **7**, 8, **10**, **11**, **14**, **18**, **19**, **23**, 28, **30**

\* normal font denotes a morning shift, **bold** denotes an evening shift.



Appendix C. Example Datasheet Used for the 2022 Red River Creel Survey (Front).

---

**2022 Red River Interview Form**

Interviewer: \_\_\_\_\_ Interview #: \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_\_

Date: \_\_\_\_\_ Location: \_\_\_\_\_ Interview Time: \_\_\_\_\_

Interview Type:      During Free Creeling                      During Normal Route

Were you Fishing Today? If YES, continue with interview.

Angler Type:    Boat    Shore    Pleasure Boaters    Trip Status: Complete or Incomplete

No. fishing in party: \_\_\_\_\_

1.    What was the primary species you/your party were fishing for today? \_\_\_\_\_
2.    Length of time each angler spent fishing.
3.    Zip Code of each angler.
4.    Have you been surveyed in the Red River Creel Survey this year?
5.    Is the opportunity to catch large Channel Catfish a major reason you are fishing the Red River?
6.    Have you ever caught a tagged Channel Catfish in the Red River? If yes, did they report it?
7.    What percentage of your open water fishing is spent targeting Channel Catfish?
8.    Have you ever caught a Lake Sturgeon on the Red River or any of its tributaries?
9.    Creel Card # for incomplete anglers who are given a Creel Card.
10.   Numbers of fish kept and released for each angler.
11.   Lengths of Kept fish and Estimated Lengths of Released fish.

	Angler 1	Angler 2	Angler 3	Angler 4
2) Time Fished				
3) Zip Code				
4) Previously Surveyed?				
5) Large Channel Catfish				
6) Tagged Catfish				
7) % Targeting Cats				
8) Lake Sturgeon				

Appendix D. Example Datasheet Used for the 2022 Red River Creel Survey (Back).

---

	Angler 1		Angler 2		Angler 3		Angler 4	
9) Creel Card #								
Species	Kept	Released	Kept	Released	Kept	Released	Kept	Released
Channel Catfish								

**Kept Fish Lengths**

Species            Lengths (nearest 10 mm)

Channel Catfish	

**Released Fish Lengths**

Species            Lengths (nearest inch group)

Channel Catfish	

Appendix E. Example Creel Card for online survey.

Your ID number is:

RR1234



*Thank you for participating in the*  
**2022 Red River Angler Survey**  
*Instructions:*  
**1. Point your smart device camera at the QR code**  
**2. Follow or tap the on-screen prompt**  
**3. Complete survey – takes about 2 minutes!**

Alternatively, you can visit <https://tinyurl.com/2p8auxxb>




Appendix F. Sample sizes (n) used for calculation of major fish species (species that the online survey directly asked about) catch, harvest, and release rates, by month and cluster.

Month	Cluster						
	1	2	3	4	5	6	Orwell
May	19	3	0*	0	0	0	14
June	9	25	2	19	24	3	17
July	25	43	12	52	98	36	13
August	17	53	3	92	60	84	20
September	27	21	12	65	45	47	14

(n) is the number of individual angler’s data (both actual and simulated (online boat interviews))

\* no cluster 3 data was obtained in May, so cluster 2 May data was utilized.

Appendix G. Monthly Estimated Angler Effort and Effort Ranking for sites included in the 2022 Red River Creel Survey.

Site	Estimated Angler Effort (hours)						Effort Ranking
	May	June	July	August	September	Total	
Deiring Park in Pembina, ND	0	97	384	2,378	418	3,277	7
Olsonowski Access	0	0	0	539	117	656	18
Golden Grain Bridge	0	0	176	299	0	475	20
Drayton Dam Recreation Area	0	43	780	2,492	1,872	5,187	4
Hastings Landing in Drayton, ND	0	117	311	1,616	315	2,359	10
State Highway 17/317 Crossing	0	128	64	221	0	413	21
Oslo, MN Access Area	0	274	716	918	380	2,288	11
North Forks Ramp / Riverside Dam	0	855	3,995	2,080	1,456	8,386	2
Lafave Park in East Grand Forks *	0	992	3,046	3,243	2,045	9,436	1
Grand Forks Central/Kannowski Park	0	0	0	0	0	0	24
Grand Forks Lincoln Park	0	492	752	545	371	2,173	12
Belmont Park and boat access	0	0	124	0	402	526	19
Riverside Park at Halstad, MN	206	240	253	785	331	1,815	13
Highway 25 crossing west of Hendrum	0	0	88	0	36	124	23
Ditch confluence just north of Fargo	84	43	315	244	180	866	17
M.B. Johnson Park in Moorhead	0	117	1,633	1,142	377	3,269	8
Fargo/Moorhead North Dam	84	507	1,117	2,031	900	4,639	5
Fargo/Moorhead Midtown Dam	137	603	728	1,815	977	4,260	6
South Dam in Moorhead	0	379	453	147	264	1,243	15
Convent Landing, southern edge of Fargo	0	697	1,718	2,242	808	5,465	3
Fort Abercrombie	91	0	859	146	0	1,096	16
Brushvale Access Area	0	0	264	73	29	366	22
Kidder Dam area in Wahpeton	629	664	736	352	734	3,115	9
Welles Park area in Breckenridge	67	96	628	276	682	1,749	14
Red River Total	1,298	6,344	19,140	23,584	12,694	63,060	
Totals may vary slightly from earlier values due to rounding							
Orwell Dam	2,520	976	2,892	2,372	1,528	10,288	

\* Lafave Park Site also included shore angling site to the NW on the ND side of the river.