

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
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COMPLETION REPORT LAKE SUPERIOR SUMMER CREEL SURVEY 2020

by
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Abstract

The covid-19 pandemic affected fishing effort in 2020 and it also affected the summer creel survey. The survey began in late June rather than Memorial Day weekend, and some fish data were not collected or were collected at lower rates than in previous years. The minimal late June survey data was added to the July period results and the unsampled May-June effort and catch was estimated, separately, from previous years' ratios of early to later season fishing and the 2020 results from July to October. This report describes the known estimates of fishing effort and catch. Anglers fished for 172,049 hours in the Minnesota waters of Lake Superior in 2020 as measured in the summer access-based creel survey and charter census. Apart from the unsampled period in May and June, angler effort declined 7% from 2019 to 2020. Effort was mostly from boaters, at 98%, and minimal from shore anglers, at just 2% of total effort. Overall, 68% of effort occurred in the Lower Shore area from Duluth to Two Harbors. Effort distribution during the early season is unknown.

Minnesota-based anglers on Lake Superior generally target salmonines, which includes Lake Trout *Salvelinus namaycush* of both lean and siscowet strains, Coho Salmon *Oncorhynchus kisutch*, Chinook Salmon *O. tshawytscha*, and Rainbow Trout *O. mykiss* of both steelhead and kamloops strains. Anglers caught 33,110 salmonines, of which 27,359 were harvested. Anglers caught 22% fewer salmonines than in 2019, and most of the harvested fish were Lake Trout. Salmonid catch and harvest rates in 2020 were 0.1924 and 0.1590 fish per angler hour, respectively, a decline of 14-18% from 2019.

Anglers caught 25,326 lean Lake Trout (leans) and 1,089 siscowet Lake Trout (siscowet) and harvested 20,645 leans and 1,053 siscowets. Lean Lake Trout accounted for 76% of all salmonines caught and 75% of all salmonines harvested. The harvested leans were 88% wild fish, up slightly from 85% in 2019. In MN-1 near Duluth, stocked fish comprised 20% of the harvest. Anglers kept 0.1200 and released 0.0272 leans per angler hour. The total catch rate for leans was 18% higher than in 2019. The harvested leans were 20.2 inches long on average.

Anglers also caught Coho, Chinook, and Pink Salmon *O. gorbuscha*, and Rainbow, Brown *Salmo trutta*, and Brook Trout *Salvelinus fontinalis* in 2020. Anglers harvested 2,121 Coho Salmon at 0.0604 fish per angler hour, which was 79% higher than the 2019 rate of 0.0337 fish per angler hour. Anglers harvested 2,639 Chinook Salmon at 0.0153 fish per angler hour, about 68% higher than in 2019. Harvested Chinook Salmon were 22.4 inches on average in 2020, which is 0.3 inch longer than in 2019. Anglers caught 29% more salmon in the Upper Shore than in the Lower Shore. Anglers caught 874 Pink Salmon. Anglers also kept 92 and released 851 steelhead, and kept 39 and released 22 other salmonines which included Brook Trout, Brown Trout, kamloops, and Atlantic Salmon *Salmo salar*. Anglers kept 5 Northern Pike, 449 Walleye, 252 Cisco *Coregonus artedii* (local name is lake herring), 8 Lake Whitefish *Coregonus clupeaformis* and released 18 Walleye and 51 Cisco.

Fifty charter captains were licensed to fish in Minnesota waters of Lake Superior in 2020; Nine captains reported no trips and two captains fished only in St. Louis Bay. Beginning in 2018, charter results are reported as a separate angler type in the annual Lake Superior summer creel survey report.

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Introduction

Lake Superior and the tributaries that are available to anadromous fishes offer unique habitats that support fisheries, which contributes to the diversity of angling opportunities in Minnesota. Several salmonines, including Lake Trout *Salvelinus namaycush*, Rainbow Trout *Oncorhynchus mykiss*, Coho Salmon *O. kisutch*, and Chinook Salmon *O. tshawytscha*, provide recreational fisheries along the North Shore of Lake Superior throughout the year.

During the first half of the 20th century, Lake Trout was the mainstay of the Lake Superior sport fishery and, along with Cisco *Coregonus artedii* (local name is lake herring) supported an important commercial fishery. By the late 1940s the Lake Trout harvest began to decline as a result of overfishing (Hansen et al. 1995). During the 1950s the Sea Lamprey *Petromyzon marinus* became established in Lake Superior and preyed heavily on Lake Trout. Lake Trout populations declined precipitously, due to mortality from Sea Lamprey, and both sport and commercial fisheries collapsed. By the early 1960s, effective control of Sea Lamprey had been achieved. Minnesota and other states and provinces began stocking salmonids to rehabilitate the depleted Lake Trout stocks and to introduce new strains of salmon species to diversify the fishery. Efforts to follow a recovery plan (Hansen 1996) were successful and Minnesota suspended stocking of Lake Trout in 2016. The state of Minnesota has monitored the recreation fishery in the Minnesota waters of Lake Superior annually since 1969.

This current report presents results from Minnesota's 2020 Lake Superior summer creel survey and charter fishing census. The covid-19 pandemic resulted in a reduced sampling time frame for the survey of Minnesota-based private sport anglers, beginning on June 24 rather than on Memorial Day weekend. Charter captains reported their entire year's effort and catch as required by law (State Statute 97C.311). In addition, data were not collected from Wisconsin-based anglers who fished in Minnesota waters of Lake Superior. Therefore, only the components of Minnesota-based private sport fishing from June 24-October 4, 2020 (i.e. the abbreviated summer creel survey) and charter fishing in Minnesota waters for the full year are included in this report. Effort and catch are estimated separately for the unsurveyed May-June sampling period, based on ratios of early to late fishing in previous years. For the May-June results, the proportion of results from the July period that actually occurred in June was removed from the May-June estimates, resulting in year-long coverage for the entire season when the May-June and July-October results are summed.

Lake Superior Management Plans (Schreiner et al. 1995; Schreiner et al. 2006; Goldsworthy et al. 2016) have suggested periodic diet sampling for salmonines to evaluate changes in the fish community and the impact of limited forage on the salmonine populations. Lake Trout, a primary predator species in Lake Superior, historically persisted on a forage base of lake herring and other coregonines. Establishment of Rainbow Smelt *Osmerus mordax* (smelt) and over-fishing of Cisco stocks led to the replacement of coregonines by smelt as the primary forage of Lake Trout (Dryer et al. 1965). Conner et al. (1993) found that smelt was the most important forage item for various salmonines in Minnesota waters of Lake Superior. Smelt abundance declined in the early 1980s (Geving 1998) and remains low; however Lake Trout diet is comprised mostly of smelt in May (Blankenheim 2018), most likely due to their high concentrations in warmer waters and to the lack of Cisco recruitment in recent years (Goldsworthy et al. 2016). Diet samples will be collected again in 2021.

Methods

This report for summer Lake Superior fishing is comprised of two primary components, a subcomponent of the charter fishery, and a component of estimates for the unsampled May-June fishery. The primary components include 1) a survey of private sport anglers, which is access-based and follows a stratified random statistical design and in 2020 was conducted from June 24 through October 4, and 2) a census of chartered anglers throughout the year. The subcomponent includes a survey of chartered trips to determine specific catch characteristics that are not reported in the charter census. The component of unsampled results from May-June period was estimated from ratios that were produced from previous years' data and from the July-October data from this year. The basic statistical method and formulas for the private sport angler survey are described by Bindman and Mach (1997), and more detail of the design of the Lake Superior summer creel survey is described by Halpern (1995a, b). The private sport angling survey includes private sport boaters, charter captains' personal trips, and shore anglers. The charter census includes data that are supplied by charter captains in monthly fishing reports. These data are required of charter captains and include location and time of fishing, number of anglers and lines, number of each species that were kept or released, and the number of fish with clipped fins that indicate stocking. Being a census, no observable measurement error exists with these data; however, reporting error does exist and is not readily calculated, is presumed to be unbiased, and is ignored in this report. In previous years, charter trips were included in the creel survey, which is somewhat redundant and may increase variance estimates. Beginning in 2018 as a subcomponent to the charter census, charter trips are also surveyed to determine angler demographics and fish attributes such as length and weight, number of Sea Lamprey wounds, and occurrence of clipped fins. The survey and census components included only anglers who fished in Lake Superior (Figure 1) and excluded angling that occurred in the St. Louis Estuary or in tributaries. The 2020 survey began in late June (June 24) and ended when the Lake Trout season ended (October 4). Covid-19 pandemic restrictions prevented the collection of boat and shore angler data through mid-June; therefore, May-June private sport fishing is not included in estimates for 2020. The few days that were sampled in June were not sufficient for the May-June sampling period and the results for those days were added to the July period. October data are included in the September estimates. The creel clerks visited the stations and groups of stations, or Clusters, that are described in Table 1. Clusters 1 and 2 are located closer to Duluth to the Southwest and comprise the Lower Shore, whereas Clusters 3 and 4 are to the Northeast and comprise the Upper Shore. Two clerks work on the creel survey, one in each Shore area. Halpern (2003) describes the general mechanics of the creel survey in more detail. The sampling design was revised in 2017 when sampling effort was dropped from two locations. One very small public access was dropped at Tofte in the Taconite Harbor area due to low use and high travel times to the access. Also, Harbor Cove was dropped from the Harbor Cove/Lakehead Marina station on 28 July 2017 due to the owner's removal of permission to use the property. The counts from the two stations, Taconite Harbor and Lakehead Marina, were adjusted based on previous estimates of effort at the dropped accesses. Taconite Harbor received 88% of the effort at Station 9 in 2014-2015 and Harbor Cove Marina received 50% of the effort at Station 2 from 2014 through 27 July 2017. Also in

2020, sampling effort was reduced but not eliminated at the Twin Points public access due to decreased fishing in recent years.

Age distribution of Lake Trout caught in the Lake Superior summer creel survey was determined using an age-length key based on all aged Lake Trout captured in assessments from 2015 through May 2019. References to 2019 creel survey numbers are from Reeves (2020). Results from the creel survey and charter census are reported separately within tables in this report and are also combined to produce attributes of total catch and effort. Figures generally include combined data, except for angler effort and for charter-specific attributes of number of captains and their number of trips.

Effort and harvest estimates for the May-June period were produced from other creel results rather than from May-June data in 2020, which were missing. Data for July through October in previous years were combined into one period for a July-October period and regressed against previous years' May-June period results to evaluate where significant relationships existed. In cases where the correlation between the May-June and July-October periods were not significant (i.e. not $p < 0.1$), mean values of effort and harvest were used as a proxy for the May-June period in 2020. In cases where the probability of no correlation was $p < 0.1$, regression coefficients were created for effort and harvest estimates for the May-June period. The regression equation used the July-October estimates from sampled anglers in 2020, plus the regression coefficients, to estimate the May-June estimates in 2020.

Results and Discussion

Fishing Effort

All private sport fishing results in the main body of this report exclude the unsampled May-June period in 2020. Charter fishing results include the entire season. Private sport fishing effort in Minnesota from Minnesota-based anglers was estimated from 468 activity counts for the Lower Shore and 330 activity counts for the Upper Shore in 2020 (Table 2). Effort along the North Shore was measured on 85 out of 103 days during the surveyed portion of the season. Private sport anglers fished for 110,768 hours (Table 3) in 13,051 trips, which lasted 4.10 hours on average and contained 2.07 anglers on average. Charter anglers fished for 61,281 hours in 2,283 trips, which lasted 5.38 hours on average and contained 4.99 anglers on average (Table 4). Captains fished about 5,000 angler-hours less in the May-June period than they did in each of the previous three May-June seasons. Early in the May-June period, pandemic restrictions reduced the number of captains who fished and the number of clients who could be on a boat at one time, which led to lower early season charter fishing. Charter effort increased later in the summer, resulting in Charter effort that was similar to the past three years. Wisconsin did not survey private sport anglers who fished in the Minnesota waters of Lake Superior in 2020. Wisconsin effort is usually less than 3,000 angler hours per year. Overall measured effort decreased by at most 7% from 2019 to 2020 (Figure 2). Beginning in 1994, the survey excluded shoreline angling at select stations that produced few fish in most years. Since 1994, effort from Minnesota-based anglers has varied from 138,522 to 204,881 hours (Figure 2). Compared to previous estimates of fishing effort in July-October, fishing effort of 112,989 angler hours in 2020 was similar to the long-term average of 108,715 hours in July-October. Effort in the Lower Shore area accounted for at least 56% of the private sport angling effort from boats (Table 5), 74% of the fishing effort from shore, and 88% of the fishing effort from charters (Table 6) in 2020. Overall, at least 68% of fishing effort came from the Lower Shore area. Lake Superior boat anglers accounted for 99% of the effort and shore anglers accounted for 1% of the effort. The distribution of effort across areas and periods is unknown due to the lack of private sportfish sampling during May-June period in all areas. Anecdotal evidence suggests that fishing effort from private sport anglers was relatively high during May and June. A substantial number of anglers may have been unemployed and had time to fish or took advantage of fishing as a social-distance activity when not working.

Shore angling continued to comprise a small fraction of summer angling effort on Lake Superior. Excluding the May-June period in 2020 that was not sampled, shoreline anglers fished for 2,054 hours in 2020 (Table 3), compared to 2,973 hours in 2019.

Charter captains chartered 0 to 169 trips in 2020 (Figure 9). Nine captains reported no trips and three captains reported trips only in the St. Louis River Estuary. Six captains chartered over 100 trips in 2020, which was the same as in 2019; captains tended to fish more, less, or not at all in 2020. Some captains obtained licenses in early 2020 and then, in response to the pandemic, chartered no trips for the entire year.

For the unsurveyed May-June period, private sport anglers were estimated to fish for 16,673 hours, including 14,019 hours from Duluth to Two Harbors, 1,499 hours from Twin Points to Taconite Harbor, and 1,155 hours from Grand Marais to Hovland.

Catch and Catch Rates

Salmonines

All private sport fishing results in this report exclude the unsampled May-June period in 2020. Salmonines include trout and salmon species. The numbers reported for private sport fishing are underestimates due to the missing data from the May-June period. Private sport anglers caught at least 19,850 salmonines (Table 7) and charter anglers caught 13,260 salmonines (Table 8), for a total catch of at least 33,110 salmonines in 2020 (Table 9). The salmonine catch in 2020 was no more than 22% less of the catch of 40,380 salmonines in 2019. Anglers released 17% of their catch (Table 9). Effort by Wisconsin-based private sport anglers is unknown (Table 10).

Regarding catch rates of salmonines in units of fish per hour, during July-October the private sport anglers caught 0.1792 fish and kept 0.1340 fish per hour (Table 11). For the entire season, Charter anglers caught 0.2164 fish and harvested 0.2042 fish per hour (Table 12). Overall, anglers caught 0.1924 fish and harvested 0.1590 fish per hour (Table 13). These rates were at least 15% lower than in 2019 (Figure 3) and do not include private sport fishing effort or catch from the May-June period in 2020. Catch rates for Wisconsin-based anglers who fished in Minnesota are unknown.

Lean Lake Trout

Excluding the unsampled May-June sampling period, private sport anglers caught 14,838 and kept 10,723 lean Lake Trout, whereas charter anglers caught 10,488 and kept 9,922 lean Lake Trout in 2020. Overall, anglers caught at least 25,326 fish, which was 11% more than in 2019 despite the lack of data for the May-June period. Compared to the previous 10-year average of 24,312 fish, anglers caught at least 4% more fish in 2020. Anglers also released 17% of their catch, or at least 4,681 fish (Table 5). Anglers harvested at least 20,645 fish, which was at least 9% more than in 2019. Lean Lake Trout accounted for 76% of all salmonines caught and 75% of all salmonines harvested; however, the estimate does not include fish that were caught during the unsampled May-June period, which usually consists of more salmon than during the July-October periods. Sixty-nine percent of the harvested lean Lake Trout were from the Lower Shore area; this estimate likely underestimates the proportion of fish caught in the Lower Shore because the fish that are caught during the May-June period invariably are more prevalent in the Lower Shore. Overall, anglers caught 0.1472 and kept 0.1200 fish per hour. Among private sport parties in the July-October periods, 49% caught one or more, 39% caught two or more, and 18% caught at least three fish per trip (Table 14). Success rates were much higher for charter angling parties; 97% of parties caught at least one fish, 79% caught at least two fish, and 58% caught at least three fish (Table 15).

Wisconsin-based private sport angler data were not collected, due to the restrictions imposed by Wisconsin in response to the covid-19 pandemic.

For fishing that occurred after the unsampled May-June period, private sport anglers kept lean Lake Trout that were 19.4 inches long on average (Table 16) and most of the fish (74%) were between 18.5 and 26.4 inches in length. Charter anglers kept fish that were 22.2 inches long on average (Table 17) and most of the fish (72%) were between 18.5 and 26.4 inches in length. Overall, mean length and length distributions were similar to harvested fish in

2019, and the clerks measured one fish longer than 39.4 inches in 2020. Private sport anglers released 46% of fish that were ≥ 25 inches long (Tables 16 & 18) and charter anglers released 3% of fish that were ≥ 25 inches long (Tables 17 & 19). The high release rates by private sport anglers on Lake Superior is unprecedented. Private sport anglers kept fish that were 3.13 pounds on average (Table 20) and charter anglers kept fish that were 3.23 pounds on average (Table 21). Average weights differed by angler type in the Upper Shore; private sport anglers kept fish that were 0.66 pounds lighter on average than charter-caught fish, which is a change of 1.4 pound difference from 2019 when private sport anglers caught heavier fish on average than did charter anglers. Yield for lean Lake Trout was 33,509 pounds by private sport anglers and 32,020 pounds by charter anglers. The total yield of at least 65,529 pounds in 2020 was no more than 6% lower than the yield of 69,410 pounds in 2019 (Table 24).

The age distribution of all harvested lean Lake Trout was similar between private sport anglers (Table 25) and charter anglers (Table 26). Age seven and eight year old fish made up 46% of the anglers' harvest (Table 27). Seven year old fish were the most abundant year class in the catch overall. Overall, each age class from seven through nine years comprised at least 10% of the harvest (Table 27), which indicates a similar low level of six-year-old fish in 2019. Older Lake Trout, at least nine years old, made up 45% of the harvest by number, which is similar to 46% in 2019 and 44% in 2018. The presence of many adult year classes indicates that the Lake Trout population has been rehabilitated and the proportion of older age classes is fairly stable; however, the proportion of younger fish may have decreased slightly and should be monitored closely.

In 2020, creel clerks checked 336 Lake Trout and observed no fin clips on 88% of harvested fish, which indicates that the fish were wild and not stocked. By area, wild fish comprised 77% of fish from the Duluth area, 97% from the McQuade-Two Harbors area, and 100% from both the Twin Points-Tofte and Grand Marais areas. Minnesota stocked Lake Trout through 2015 in the Lower Shore area and through 2003 in the Upper Shore area. Wisconsin has stocked Lake Trout through 2020. Stocked fish from the 2009 through 2014 year classes were poorly represented in the recreational fishery in 2020, which indicates that Minnesota stocking produced few of the fish that anglers harvested.

Siscowet

Siscowet, a deepwater form of Lake Trout, have generally contributed little to the sport fishery, except for a slight increase from 2015 through 2018. Covid-19 restrictions reduced the clerks' ability to identify siscowet, thus the siscowet catch may have been higher than observed. The identified siscowet catch was low in 2020, similar to 2019.

Coho Salmon

Private sport anglers caught 1,776 and kept 1,693 Coho Salmon, whereas charter anglers caught 435 and kept 428 fish in 2020. Overall, anglers caught 2,211 fish, which was at most 80% less than in 2019 and considerably less than the previous 10-year average catch of 4,839. Anglers also released at least 91 fish, or 4% of their catch (Table 9). Coho Salmon accounted for 7% of all salmonines caught and 8% of all salmonines harvested. Seventy percent of the fish were caught in the Upper Shore area, which is higher than to 2019 and likely reflects the lack of catch data from May and June. Harvest rates were 0.0153 fish per hour for private sport anglers

and 0.007 fish per hour for charter anglers, or 0.0123 fish per hour overall. Among private sport parties, 12.4% caught one or more, 2.3% caught two or more, and 0.7% caught at least three fish per trip (Table 14). Success rates were lower for charter angling parties; only 2.8% of parties caught one fish and no parties caught more than one. Seasonally, Coho Salmon are first caught in the Lower Shore area and then later in the Upper Shore area; this pattern was repeated in 2020 and the disparity in Coho Salmon catches between private sport anglers and charter anglers may be due low effort by charters in the early part of the fishing season due to the covid-19 pandemic. Anglers kept Coho Salmon that were 21.1 inches long on average (Tables 16 and 17), which is larger than the length of 18.4 inches in 2019. Average weight was lower in the Lower Shore, at 2.03 pounds, than in the Upper Shore, at 2.40 pounds in 2020 (Tables 20 and 21). Coho Salmon grow as they move up the shoreline toward Grand Marais in the summer. Anglers harvested 4,797 pounds of Coho Salmon in 2020 (Table 24), which is at most a 76% decrease from 2019. The harvest of Coho Salmon has varied considerably among years (Figure 5), which reflects the naturally fluctuating year-class strength for Coho Salmon in Lake Superior. Coho Salmon were last stocked in 2006 by the Michigan DNR and last stocked in Minnesota waters in 1974; thus, all Coho Salmon caught in Lake Superior are naturally reproduced.

Chinook Salmon

Private sport anglers caught 1,764 and kept 1,711 Chinook Salmon, whereas charter anglers caught 934 fish and kept all but 6 fish in 2020. Overall, anglers caught 2,698 fish, which is no more than 4% less fish than in 2019 and 11% less than the average of 3,017 fish over the previous 10 years. Chinook Salmon accounted for 8% of all salmonines caught and 7% of all salmonines harvested. Only 31% of the fish were from the Lower Shore area. Private sport anglers kept 0.0153 fish per hour and charter anglers kept 0.0152 fish per hour, or 0.0153 fish per hour overall, which is very close to levels seen in 2019. Among private sport parties, 13.8% caught one or more, 4.4% caught two or more, and 1.3% caught at least three fish per trip (Table 14). Success rates were higher for charter angling parties; 25.2% of parties caught at least one fish, 6.9% caught at least two fish, and 2.7% caught at least three fish. Anglers kept fish that were 22.2-23.5 inches long on average (Tables 16 and 17), which is about the same size as fish caught in 2018 and 2019. Anglers harvested 10,623 pounds of Chinook Salmon in 2020 (Table 24), which is similar to 2019. Creel clerks examined 21 fish for stocking clips and observed 0 clipped fish, which indicates that Chinook Salmon stocking in other jurisdictions contributes minimally to catches in Minnesota.

Steelhead Rainbow Trout

Minnesota-based anglers caught 851 steelhead Rainbow Trout in 2020 (Table 9), which was at most 33% less than in 2019. Steelhead catches were highest in the Grand Marais area in 2020. The location of highest catches changes from year to year, indicating that steelhead movement patterns vary from year to year. Anglers kept 92 steelhead in the summer of 2020, despite the ban on harvest of steelhead in the Minnesota waters of Lake Superior. Anglers sometimes mis-identify smaller steelhead as Coho Salmon.

Pink Salmon

Minnesota-based anglers caught only 874 Pink Salmon *Oncorhynchus gorbuscha* in 2020 (Table 9). Pink Salmon catches vary considerably over time, ranging from 0 fish in the late

1980s to 4,139 fish in 2010. Pink Salmon reproduce naturally in Lake Superior (Schreiner et al. 2006) and the fluctuations in catch reflect the fluctuations in reproductive success of Pink Salmon along the North Shore. The fish were mostly larger than in 2019, averaging 16.8 inches, and anglers kept 88% of the fish they caught.

Other Species

Anglers catch a few other fish species as well during the summer, generally in low numbers. Catch data for the infrequently-caught salmonines were combined and reported as 61 other salmonines (Table 9). The combined species include harvests of 18 Brown Trout *Salmo trutta*, 3 Kamloops Rainbow Trout, and 5 unknown salmon, and releases of 6 Kamloops Rainbow Trout and 12 unknown salmon. An angler reported catching an Atlantic Salmon *Salmo salar* but the clerk did not examine the fish. Anglers caught these other salmonines at a rate of 0.0003 fish per hour.

May-June catch estimates

Anglers harvested an estimated 4,942 salmonids during the unsampled May-June period. The estimated harvest consisted of 1,846 Lake Trout, 1,834 Coho Salmon, 275 Chinook Salmon, and 987 other salmonines, mostly siscowet Lake Trout and Pink Salmon.

Summary

The Lake Superior creel survey continues to provide essential information on the fishery in Minnesota waters of Lake Superior. This is vital to the future management of Lake Superior fish stocks and for coordinated management among Lake Superior fisheries management agencies. Effort and catch results were influenced in 2020 by the covid-19 pandemic due to the following factors; the creel survey did not begin until late June, high fishing effort was documented in July-October, early season Charter fishing was reduced due to early uncertainty and to party size restrictions, and anecdotal evidence suggests high fishing effort in the early season from May through June. Lake Trout harvest rates were somewhat lower than normal, in part due to lower catch rates as well as a higher release percentage by anglers. Coho Salmon catches were substantially lower in 2020 than in 2019. The Lake Trout are now mostly wild (88%), not clipped, and this is especially true in the Upper Shore where 100% of the harvested fish were wild. The percentage of stocked Lake Trout near Duluth was higher in the past couple of years, potentially due to continued stocking by Wisconsin.

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Period: April 1, 2020-March 31, 2021 (Segment 35-1)

Federal Project Number: F19AF00189

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Study 4

Job 1103

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

COMPLETION REPORT
LAKE SUPERIOR SUMMER CREEL SURVEY
2020

by
Keith A. Reeves
Lake Superior Fisheries Office

Area Fisheries Approved:

Regional Fisheries Approved:

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Table 1. Creel survey clusters and stations in the 2020 Lake Superior summer creel survey.

Shore	Cluster	Station	Description
Lower	1-Duluth	1	Charter Dock
		2	Lakehead Boat Basin
		3	Rice's Point Landing
	2-McQuade to Two Harbors	4	McQuade Public Access
		5	Knife River-Knife River Marina
		6	Two Harbors-Agate Bay Access
Upper	3-Twin Points to Tofte	7	Twin Points Access
		8	Silver Bay Access and Marina
		9	Taconite Harbor, Tofte
	4-Grand Marais to Hovland	10	Grand Marais Access and Marina
		11	Devil Track and Brule Rivers, Hovland Access

Table 2. Frequency of clerk visits and number of activity counts and interviews, by day type, cluster, shore area, and total area, for each cluster and day type in the 2020 Lake Superior summer creel survey¹.

District ³	Cluster ⁴	Day type	Days Visited	Activity Counts	Days			Interviews ²		
					Boat	Shore	Charter	Boat	Shore	Charter
MN-1	1	Weekday	19	108	12	0	12	12	0	26
		Weekend	15	84	11	0	12	19	0	29
		Total	34	192	31	0	24	31	0	55
MN-1	2	Weekday	25	150	21	7	2	121	23	3
		Weekend	16	96	15	3	2	137	3	2
		Total	41	246	36	10	4	258	26	5
MN-2	3	Weekday	20	100	13	2	2	48	3	2
		Weekend	14	70	12	3	2	69	3	2
		Total	34	170	25	7	4	117	6	4
MN-3	4	Weekday	24	110	15	14	2	160	22	2
		Weekend	16	80	13	7	3	86	9	5
		Total	40	190	28	21	5	246	31	7
Lower	1,2	Weekday	43	258	33	7	14	133	23	29
		Weekend	30	180	26	3	14	156	3	31
		Total	73	438	59	10	28	289	26	60
Upper	3,4	Weekday	42	210	28	16	4	208	25	4
		Weekend	30	150	25	10	5	155	12	7
		Total	72	360	53	26	9	363	37	11
Total		Weekday	55	468	49	21	17	341	48	33
		Weekend	30	330	29	11	15	311	15	38
		Total	85	798	78	32	32	652	63	71

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

² 3 angling parties refused to be interviewed. The clerk was excluded from ½ of Station 2 in 2020.

³ Great Lakes Fishery Commission Statistical Districts

⁴ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

Table 3. Fishing effort (angler hours¹) for private sport and shore anglers by angler type, location, and shore area in the 2020 Lake Superior summer creel survey^{2,3}. SE in parentheses.

District ⁴	Cluster ⁵	Value	Boat ⁶					Shore ⁷				
			June	July	Aug	Sept	Summer	June	July	Aug	Sept	Summer
MN-1	1	Hours	0	3,468	2,734	3,250	9,452	0	0	0	0	0
		SE	(0)	(887)	(1,299)	(1,418)	(2,118)	(0)	(0)	(0)	(0)	(0)
MN-1	2	Hours	0	22,455	15,888	12,721	51,064	0	378	514	637	1,529
		SE	(0)	(5,914)	(1,758)	(2,699)	(6,734)	(0)	(131)	(127)	(213)	(281)
MN-2	3	Hours	0	13,536	8,025	7,371	28,931	0	71	0	41	113
		SE	(0)	(3,230)	(1,644)	(1,726)	(4,015)	(0)	(56)	(0)	(28)	(62)
MN-3	4	Hours	0	6,041	10,466	2,760	19,267	0	227	100	90	413
		SE	(0)	(1,143)	(1,845)	(791)	(2,310)	(0)	(50)	(37)	(37)	(71)
Lower	1,2	Hours	0	25,923	18,623	15,971	60,516	0	378	514	637	1,529
		SE	(0)	(5,980)	(2,186)	(3,049)	(7,060)	(0)	(131)	(127)	(213)	(280)
Upper	3,4	Hours	0	19,577	18,491	10,131	48,198	0	298	100	127	525
		SE	(0)	(3,427)	(2,471)	(1,898)	(4,632)	(0)	(75)	(37)	(44)	(94)
Total		Hours	0	45,499	37,113	26,102	108,714	0	675	614	765	2,054
		SE	(0)	(6,892)	(3,299)	(3,592)	(8,443)	(0)	(151)	(133)	(217)	(296)

¹ Estimates were rounded to the nearest whole number.

² Wisconsin did not conduct a creel survey in 2020.

³ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

⁴ Great Lakes Fishery Commission Statistical Districts

⁵ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁶ Includes private boaters and unchartered fishing trips with charter captains.

⁷ All shore fishing in Cluster 1 occurs in the St. Louis Estuary, not in Lake Superior, and is not included.

Table 4. Fishing effort (angler hours¹) for charter anglers and for all anglers, by location and shore area, in the 2020 Lake Superior summer creel survey^{2,3}. SE in parentheses.

Charter								All				Total
District ⁴	Cluster ⁵	Value	June	July	Aug	Sept	Summer	June	July	Aug	Sept	Summer
MN-1	1	Hours	11,579	15,244	15,817	8,729	51,369	11,579	18,712	18,551	11,979	60,821
		SE	(0)	(0)	(0)	(0)	(0)	(0)	(887)	(1,299)	(1,418)	(2,118)
MN-1	2	Hours	173	1,099	924	660	2,856	173	23,931	17,326	14,018	55,449
		SE	(0)	(0)	(0)	(0)	(0)	(0)	(6,045)	(1,885)	(2,912)	(6,970)
MN-2	3	Hours	754	1,444	1,615	976	4,789	754	15,051	9,640	8,388	33,833
		SE	(0)	(0)	(0)	(0)	(0)	(0)	(3,286)	(1,644)	(1,753)	(4,071)
MN-3	4	Hours	215	657	857	538	2,267	215	6,924	11,423	3,384	21,946
		SE	(0)	(0)	(0)	(0)	(0)	(0)	(1,194)	(1,882)	(825)	(2,376)
Lower	1,2	Hours	11,752	16,343	16,741	9,389	54,225	11,752	42,643	35,878	25,997	116,270
		SE	(0)	(0)	(0)	(0)	(0)	(0)	(6,110)	(2,289)	(3,239)	(7,284)
Upper	3,4	Hours	969	2,101	2,472	1,514	7,056	969	21,975	21,063	11,772	55,779
		SE	(0)	(0)	(0)	(0)	(0)	(0)	(3,496)	(2,499)	(1,938)	(8,072)
Total		Hours	12,721	18,444	19,213	10,903	61,281	12,721	64,619	56,940	37,769	172,049
Total		SE	(0)	(0)	(0)	(0)	(0)	(0)	(7,039)	(3,389)	(3,774)	(8,677)

¹ Estimates were rounded to the nearest whole number.

² Wisconsin did not conduct a creel survey in 2020.

³ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

⁴ Great Lakes Fishery Commission Statistical Districts

⁵ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

Table 5. Monthly distribution of fishing effort for private sport boat and shore anglers by angler type, location, and shore area as a percentage of angler hours in the 2020 Lake Superior summer creel survey¹. SE in parentheses.

District ²	Cluster ³	Station	June ⁴	Boat ⁵				Shore ⁶				
				July	Aug	Sept	Summer	June	July	Aug	Sept	Summer
MN-1	1		0	7.6	7.4	11.7	8.5	0	0	0	0	0
		1	0	0	0	0	0	0	0	0	0	0
		2	0	3.3	2	4.1	3	0	0	0	0	0
		3	0	4.4	5.4	7.6	5.5	0	0	0	0	0
MN-1	2		0	49.4	42.8	49.2	47.1	0	55.9	83.7	83.0	74.4
		4	0	18.9	15.7	19.4	17.9	0	11.7	5.6	1.3	6
		5	0	9.5	9.4	13.4	10.4	0	0	0	0	0
		6	0	21	17.7	16.4	18.8	0	44.2	78.1	81.7	68.4
MN-2	3		0	29.7	21.6	28.5	26.7	0	10.6	0	5.4	5.5
		7	0	6.1	2.2	2.9	4	0	0	0	0	0
		8	0	15.8	13.5	15.5	14.9	0	0	0	0	0
		9	0	7.9	5.9	10.2	7.7	0	10.6	0	5.4	5.5
MN-3	4		0	13.3	28.2	10.3	17.7	0	33.5	16.3	11.7	20.1
		10	0	10.7	22	8.2	14.0	0	33.5	16.3	11.7	20.1
		11	0	2.5	6.2	2.1	3.7	0	0	0	0	0
Lower	1,2		0	57	50.2	60.9	55.6	0	55.9	83.7	83.0	74.3
Upper	3,4		0	43	49.8	39.1	44.4	0	44.1	16.3	17.1	25.7

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

² Great Lakes Fishery Commission Statistical Districts

³ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁴ Private sport fishing boats and shore anglers were not surveyed prior to June 24, and late June data were added to the July Period.

⁵ Excludes charter fishing effort and includes personal charter captain's trips.

⁶ All shore fishing in Cluster 1 occurs in the St. Louis Estuary, not in Lake Superior, and is not included.

Table 6. Monthly distribution¹ of fishing effort for charter anglers and for all anglers, by angler type, location, and total area, as a percentage of angler hours in the 2020 Lake Superior summer creel survey¹. SE in parentheses.

District ²	Cluster ³	Station	Charter ⁵					All				
			June ⁴	July	Aug	Sept	Summer	June	July	Aug	Sept	Summer
MN-1	1		91	82.6	82.3	80.1	83.8	91	29	32.6	31.4	35.3
		1	69	64.9	59.2	59.2	63	69	18.5	20	17.2	22.5
		2	22	17.6	23.1	20.9	20.8	22	7.3	9.1	8.9	9.3
		3	0	0.1	0	0	0	0	3.1	3.5	5.3	3.5
MN-1	2		1.4	6	4.8	6.1	4.7	1.4	37	30.4	37.4	32.3
		4	0	0	0	0	0	0	13.4	10.3	13.4	11.4
		5	1.4	6	4.8	5.6	4.6	1.4	8.4	7.8	10.9	8.2
		6	0	0	0	0.4	0.1	0	15.2	12.4	13.1	12.7
MN-2	3		5.9	7.8	8.4	9	7.8	5.9	23.3	16.9	22.4	19.7
		7	0	0	0	0	0	0	4.3	1.5	2	2.5
		8	1.7	2.1	3.4	2.7	2.5	1.7	11.7	10	11.4	10.3
		9	4.2	5.7	5	6.3	5.3	4.2	7.3	5.5	8.9	6.8
MN-3	4		1.7	3.6	4.5	4.9	3.7	1.7	10.7	20.1	8.8	12.7
		10	1.7	3.6	4.5	4.9	3.7	1.7	8.9	16	7.3	10.4
		11	0	0	0	0	0	0	1.8	4.1	1.5	2.3
Lower	1,2		92.4	88.6	87.1	86.2	88.5	92.4	66	63	68.7	67.5
Upper	3,4		7.6	11.4	12.9	13.9	11.5	7.6	34	37	31.3	32.5

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

² Great Lakes Fishery Commission Statistical Districts

³ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁴ Private sport fishing boats and shore anglers were not surveyed prior to June 24, and late June data were added to the July Period.

⁵ Includes charter fishing effort that was based in Wisconsin.

Table 7. Catch by species, location, and shore area for private sport boat and shore anglers in the 2020 Lake Superior summer creel survey¹. SE in parentheses.

District ²	Cluster ³	Fate	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other ⁴ Salmonines	Total Salmonines	Walleye
MN-1	1	Kept	601	0	43	0	0	0	0	644	13
			(458)	(0)	(48)	(0)	(0)	(0)	(0)	(461)	(21)
		Released	0	10	0	10	0	0	0	20	0
			(0)	(12)	(0)	(12)	(0)	(0)	(0)	(17)	(0)
MN-1	2	Kept	5,443	421	168	0	13	0	0	6,045	13
			(2,537)	(226)	(114)	(0)	(19)	(0)	(0)	(2,550)	(20)
		Released	2,649	39	13	71	36	20	0	2,828	0
			(1,472)	(44)	(20)	(76)	(33)	(28)	(0)	(1,475)	(0)
MN-2	3	Kept	2,530	825	670	0	0	58	0	4,083	0
			(1,294)	(430)	(381)	(0)	(0)	(59)	(0)	(1,417)	(0)
		Released	682	0	0	250	0	0	0	932	0
			(539)	(0)	(0)	(185)	(0)	(0)	(0)	(570)	(0)
MN-3	4	Kept	2,149	447	830	84	0	547	17	4,074	0
			(1,115)	(295)	(496)	(113)	(0)	(422)	(22)	(1,330)	(0)
		Released	784	34	40	269	0	83	14	1,224	0
			(520)	(35)	(46)	(193)	(0)	(60)	(17)	(561)	(0)
Lower	1 & 2	Kept	2,933	481	870	353	0	630	31	5,298	0
			(1,230)	(297)	(498)	(224)	(0)	(426)	(28)	(1,443)	(0)
		Released	6,044	421	211	0	13	0	0	6,689	26
			(2,578)	(226)	(124)	(0)	(19)	(0)	(0)	(2,591)	(29)
Upper	3 & 4	Kept	2,649	49	13	81	36	20	0	2,848	0
			(1,472)	(46)	(20)	(77)	(33)	(28)	(0)	(1,475)	(0)
		Released	8,693	470	224	81	49	20	0	9,537	26
			(2,969)	(231)	(125)	(77)	(38)	(28)	(0)	(2,982)	(29)
Total	1,2,3,4	Kept	4,679	1,272	1,500	84	0	605	17	8,157	0
			(1,708)	(521)	(625)	(113)	(0)	(426)	(22)	(1,943)	(0)
		Released	1,466	34	40	519	0	83	14	2,156	0
			(749)	(35)	(46)	(267)	(0)	(60)	(17)	(800)	(0)
Total	1,2,3,4	Kept	6,145	1,306	1,540	603	0	688	31	10,313	0
			(1,865)	(523)	(627)	(290)	(0)	(430)	(28)	(2,102)	(0)
		Released	10,723	1,693	1,711	84	13	605	17	14,846	26
			(3,093)	(568)	(638)	(113)	(19)	(426)	(22)	(3,239)	(29)
Total	1,2,3,4	Kept	2,649	49	13	81	36	20	0	2,848	0
			(1,472)	(46)	(20)	(77)	(33)	(28)	(0)	(1,475)	(0)
		Released	8,693	470	224	81	49	20	0	9,537	26
			(2,969)	(231)	(125)	(77)	(38)	(28)	(0)	(2,982)	(29)
Total	1,2,3,4	Kept	4,679	1,272	1,500	84	0	605	17	8,157	0
			(1,708)	(521)	(625)	(113)	(0)	(426)	(22)	(1,943)	(0)
		Released	1,466	34	40	519	0	83	14	2,156	0
			(749)	(35)	(46)	(267)	(0)	(60)	(17)	(800)	(0)
Total	1,2,3,4	Kept	6,145	1,306	1,540	603	0	688	31	10,313	0
			(1,865)	(523)	(627)	(290)	(0)	(430)	(28)	(2,102)	(0)
		Released	10,723	1,693	1,711	84	13	605	17	14,846	26
			(3,093)	(568)	(638)	(113)	(19)	(426)	(22)	(3,239)	(29)
Total	1,2,3,4	Kept	2,649	49	13	81	36	20	0	2,848	0
			(1,472)	(46)	(20)	(77)	(33)	(28)	(0)	(1,475)	(0)
		Released	8,693	470	224	81	49	20	0	9,537	26
			(2,969)	(231)	(125)	(77)	(38)	(28)	(0)	(2,982)	(29)

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

² Great Lakes Fishery Commission Statistical Districts

³ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁴ Includes harvests of 17 Atlantic Salmon and releases of 12 other salmon. Anglers also kept 248 Cisco and released 51 Cisco.

Table 8. Catch by species, location, and shore area for chartered anglers¹ in the 2020 Lake Superior summer creel survey². SE=0 for all values.

District ³	Cluster ⁴	Fate	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other ⁵ Salmonines	Total Salmonines	Walleye
MN-1	1	Kept	7,847	227	540	0	1,019	2	19	9,654	422
		Released	218	7	4	78	0	0	7	314	17
		Total	8,065	234	544	78	1,019	2	26	9,968	439
MN-1	2	Kept	421	18	76	6	21	34	0	576	0
		Released	132	0	0	12	0	1	1	146	1
		Total	553	18	76	18	21	35	1	722	1
MN-2	3	Kept	1,183	78	99	2	0	40	3	1,405	1
		Released	210	0	1	44	0	0	0	255	0
		Total	1,393	78	100	46	0	40	3	1,660	1
MN-3	4	Kept	471	105	213	0	0	89	0	878	0
		Released	6	0	1	25	0	0	0	32	0
		Total	477	105	214	25	0	89	0	910	0
Lower	1,2	Kept	8,268	245	616	6	1,040	36	19	10,230	422
		Released	350	7	4	90	0	1	8	460	18
		Total	8,618	252	620	96	1,040	37	27	10,690	440
Upper	3,4	Kept	1,654	183	312	2	0	129	3	2,283	1
		Released	216	0	2	69	0	0	0	287	0
		Total	1,870	183	314	71	0	129	3	2,570	1
Total		Kept	9,922	428	928	8	1,040	165	22	12,513	423
		Released	566	7	6	159	0	1	8	747	18
		Total	10,488	435	934	167	1,040	166	30	13,260	441

¹ The Minnesota results include all charter fishing, including trips that originated from Wisconsin.

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

³ Great Lakes Fishery Commission Statistical Districts

⁴ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁵ Includes harvests of 18 Brown Trout, 3 kamloops Rainbow Trout, and 5 other salmon, and releases of 6 kamloops Rainbow Trout. Anglers also kept 5 Northern Pike, 4 Cisco and 8 Lake Whitefish and released 1 Northern Pike.

Table 9. Catch¹ by species, location, and shore area for all anglers in the 2020 Lake Superior summer creel survey². SE in parentheses.

District ³	Cluster ⁴	Fate	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other ⁵ Salmonines	Total Salmonines	Walleye
MN-1	1	Kept	8,448	227	583	0	1,019	2	19	10,298	435
		(SE)	(458)	(0)	(48)	(0)	(0)	(0)	(0)	(461)	(21)
		Released	218	17	4	88	0	0	7	334	17
		(SE)	(0)	(12)	(0)	(12)	(0)	(0)	(0)	(17)	(0)
		Total	8,666	244	587	88	1,019	2	26	10,632	452
		(SE)	(458)	(12)	(48)	(12)	(0)	(0)	(0)	(461)	(21)
MN-1	2	Kept	5,864	439	244	6	34	34	0	6,621	13
		(SE)	(2,537)	(226)	(114)	(0)	(19)	(0)	(0)	(2,550)	(20)
		Released	2,781	39	13	83	36	21	1	2,974	1
		(SE)	(1,472)	(44)	(20)	(76)	(33)	(28)	(0)	(1,475)	(0)
		Total	8,645	478	257	89	70	55	1	9,595	14
		(SE)	(2,933)	(230)	(116)	(76)	(38)	(28)	(0)	(2,946)	(20)
MN-2	3	Kept	3,713	903	769	2	0	98	3	5,488	1
		(SE)	(1,294)	(430)	(381)	(0)	(0)	(59)	(0)	(1,417)	(0)
		Released	892	0	1	294	0	0	0	1,187	0
		(SE)	(539)	(0)	(0)	(185)	(0)	(0)	(0)	(570)	(0)
		Total	4,605	903	770	296	0	98	3	6,675	1
		(SE)	(1,402)	(430)	(381)	(185)	(0)	(59)	(0)	(1,527)	(0)
MN-3	4	Kept	2,620	552	1,043	84	0	636	17	4,952	0
		(SE)	(1,115)	(295)	(496)	(113)	(0)	(422)	(22)	(1,330)	(0)
		Released	790	34	41	294	0	83	14	1,256	0
		(SE)	(520)	(35)	(46)	(193)	(0)	(60)	(17)	(561)	(0)
		Total	3,410	586	1,084	378	0	719	31	6,208	0
		(SE)	(1,230)	(297)	(498)	(224)	(0)	(426)	(28)	(1,443)	(0)
Lower	1 & 2	Kept	14,312	666	827	6	1,053	36	19	16,919	448
		(SE)	(2,578)	(226)	(124)	(0)	(19)	(0)	(0)	(2,591)	(29)
		Released	2,999	56	17	171	36	21	8	3,308	18
		(SE)	(1,472)	(46)	(20)	(77)	(33)	(28)	(0)	(1,475)	(0)
		Total	17,311	722	844	177	1,089	57	27	20,227	466
		(SE)	(2,969)	(231)	(125)	(77)	(38)	(28)	(0)	(2,982)	(29)
Upper	3 & 4	Kept	6,333	1,455	1,812	86	0	734	20	10,440	1
		(SE)	(1,708)	(521)	(625)	(113)	(0)	(426)	(22)	(1,943)	(0)
		Released	1,682	34	42	588	0	83	14	2,443	0
		(SE)	(749)	(35)	(46)	(267)	(0)	(60)	(17)	(800)	(0)
		Total	8,015	1,489	1,854	674	0	817	34	12,883	1
		(SE)	(1,865)	(523)	(627)	(290)	(0)	(430)	(28)	(2,102)	(0)
Total	1,2,3,4	Kept	20,645	2,121	2,639	92	1,053	770	39	27,359	449
		(SE)	(3,093)	(568)	(638)	(113)	(19)	(426)	(22)	(3,239)	(29)
		Released	4,681	90	59	759	36	104	22	5,751	18
		(SE)	(1,652)	(57)	(50)	(278)	(33)	(66)	(17)	(1,678)	(0)
		Total	25,326	2,211	2,698	851	1,089	874	61	33,110	467
		(SE)	(3,467)	(570)	(638)	(230)	(38)	(427)	(22)	(3,605)	(29)

¹ The Minnesota results include all charter fishing and excludes Wisconsin-based private sport anglers.

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

³ Great Lakes Fishery Commission Statistical Districts

⁴ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁵ Includes harvests of 18 Brown Trout, 3 kamloops Rainbow Trout, 17 Atlantic Salmon, and 5 unknown salmon, and releases of 6 kamloops and 12 unknown salmon. Anglers also kept 5 Northern Pike, 8 Lake Whitefish, 252 Cisco, and released 51 Cisco and 1 Northern Pike.

Table 10. Catch¹ by species, cluster, and shore area for private sport boats from Wisconsin in the 2020 Lake Superior summer creel survey. SE in parentheses.

District ²	Cluster ³	Fate	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other ⁴ Salmonines	Total Salmonines	Walleye
MN-1	1	Kept									

¹ Wisconsin anglers who were not surveyed by Wisconsin DNR in 2020.

² Great Lakes Fishery Commission Statistical Districts

³ Cluster 1=Duluth

⁴ Anglers who fished Minnesota waters also caught an estimated 21 Brown Trout and 10 Lake Whitefish.

Table 11. Catch rate (fish hour⁻¹) by species, location, and shore area for private sport and shore anglers in the 2020 Lake Superior summer creel survey¹. SE in parentheses.

District ²	Cluster ³	Fate	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other ⁴ Salmonines	Total Salmonines	Walleye
MN-1	1	Kept	0.0636	0	0.0045	0	0	0	0	0.0681	0.0014
		(SE)	(0.0505)	(0)	(0.0052)	(0)	(0)	(0)	(0)	(0.0419)	(0.0022)
		Released	0	0.0012	0	0.0012	0	0	0	0.0021	0
		(SE)	(0)	(0.0013)	(0)	(0.0018)	(0)	(0)	(0)	(0.0028)	(0)
		Total	0.0630	0.0012	0.0045	0.0012	0	0	0	0.0702	0.0014
MN-1	2	(SE)	(0.0505)	(0.0013)	(0.0052)	(0.0018)	(0)	(0)	(0)	(0.0420)	(0.0022)
		Kept	0.1035	0.0080	0.0032	0	0.0002	0	0	0.1149	0.0002
		(SE)	(0.0500)	(0.0044)	(0.0022)	(0)	(0.0004)	(0)	(0)	(0.0515)	(0.0004)
		Released	0.0504	0.0007	0.0002	0.0013	0.0007	0.0004	0	0.0538	0
		(SE)	(0.0287)	(0.0008)	(0.0004)	(0.0015)	(0.0006)	(0.0005)	(0)	(0.0264)	(0)
MN-2	3	Total	0.1539	0.0087	0.0034	0.0013	0.0009	0.0004	0	0.1687	0.0002
		(SE)	(0.0577)	(0.0045)	(0.0022)	(0.0015)	(0.0007)	(0.0005)	(0)	(0.0579)	(0.0004)
		Kept	0.0871	0.0284	0.0231	0	0	0.0020	0	0.1406	0
		(SE)	(0.0462)	(0.0153)	(0.0135)	(0)	(0)	(0.0021)	(0)	(0.0732)	(0)
		Released	0.0235	0	0	0.0086	0	0	0	0.0321	0
MN-3	4	(SE)	(0.0189)	(0)	(0)	(0.0065)	(0)	(0)	(0)	(0.0168)	(0)
		Total	0.1106	0.0284	0.0231	0.0086	0	0.0020	0	0.1727	0
		(SE)	(0.0499)	(0.0153)	(0.0135)	(0.0065)	(0)	(0.0021)	(0)	(0.0751)	(0)
		Kept	0.1092	0.0227	0.0422	0.0043	0	0.0278	0.0009	0.2070	0
		(SE)	(0.0581)	(0.0152)	(0.0257)	(0.0058)	(0)	(0.0217)	(0.0011)	(0.0712)	(0)
Lower	1 & 2	Released	0.0398	0.0017	0.0020	0.0144	0	0.0042	0.0007	0.0622	0
		(SE)	(0.0268)	(0.0018)	(0.0023)	(0.0103)	(0)	(0.0031)	(0.0009)	(0.0272)	(0)
		Total	0.1501	0.0244	0.0442	0.0187	0	0.0320	0.0016	0.2692	0
		(SE)	(0.0644)	(0.0153)	(0.0258)	(0.0118)	(0)	(0.0219)	(0.0014)	(0.0762)	(0)
		Kept	0.0974	0.0068	0.0034	0	0.0002	0	0	0.1078	0.0004
Upper	3 & 4	(SE)	(0.0430)	(0.0037)	(0.0020)	(0)	(0.0003)	(0)	(0)	(0.0469)	(0.0005)
		Released	0.0427	0.0008	0.0002	0.0013	0.0006	0.0003	0	0.0459	0
		(SE)	(0.0242)	(0.0007)	(0.0003)	(0.0012)	(0.0005)	(0.0005)	(0)	(0.0245)	(0)
		Total	0.1401	0.0076	0.0036	0.0013	0.0008	0.0003	0	0.1537	0.0004
		(SE)	(0.0493)	(0.0038)	(0.0020)	(0.0012)	(0.0006)	(0.0005)	(0)	(0.0548)	(0.0005)
Total	1,2,3,4	Kept	0.0960	0.0261	0.0308	0.0017	0	0.0124	0.0003	0.1674	0
		(SE)	(0.0362)	(0.0110)	(0.0132)	(0.0023)	(0)	(0.0088)	(0.0005)	(0.0529)	(0)
		Released	0.0301	0.0007	0.0008	0.0107	0	0.0017	0.0002	0.0443	0
		(SE)	(0.0156)	(0.0007)	(0.0009)	(0.0056)	(0)	(0.0012)	(0.0003)	(0.0141)	(0)
		Total	0.1261	0.0268	0.0316	0.0124	0	0.0141	0.0006	0.2117	0
		(SE)	(0.0394)	(0.0110)	(0.0132)	(0.0061)	(0)	(0.0089)	(0.0006)	(0.0547)	(0)
		Kept	0.0968	0.0153	0.0154	0.0008	0.0001	0.0055	0.0002	0.1340	0.0002
		(SE)	(0.0289)	(0.0053)	(0.0059)	(0.0010)	(0.0002)	(0.0039)	(0.0002)	(0.0310)	(0.0003)
		Released	0.0371	0.0007	0.0005	0.0054	0.0003	0.0009	0.0001	0.0452	0
		(SE)	(0.0152)	(0.0005)	(0.0005)	(0.0025)	(0.0003)	(0.0006)	(0.0001)	(0.0156)	(0)
		Total	0.1340	0.0160	0.0159	0.0062	0.0004	0.0064	0.0003	0.1792	0.0002
		(SE)	(0.0327)	(0.0053)	(0.0059)	(0.0027)	(0.0004)	(0.0039)	(0.0002)	(0.0347)	(0.0003)

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

² Wisconsin angler harvest and release were not recorded in 2020.

³ Covid-19 pandemic-related restrictions delayed this survey until June 24, 2020. May-June results are not included in this table.

⁴ Includes harvests of 17 Atlantic Salmon and releases of 12 other salmon. Anglers also kept 248 Cisco and released 51 Cisco.

Table 12. Catch rate (fish* hour⁻¹) by species, location, and shore area for charter anglers in the 2020 Lake Superior summer creel survey¹. SE in parentheses.

District ²	Cluster ³	Fate	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other ⁴ Salmonines	Total Salmonines	Walleye
MN-1	1	Kept	0.1528	0.0044	0.0105	0	0.0198	0	0.0004	0.1879	0.0082
		Released	0.0042	0.0001	0.0001	0.0015	0	0	0.0001	0.0061	0.0003
		Total	0.1570	0.0046	0.0106	0.0015	0.0198	0	0.0005	0.1940	0.0085
MN-1	2	Kept	0.1474	0.0063	0.0266	0.0021	0.0074	0.0119	0	0.2017	0
		Released	0.0462	0	0	0.0042	0	0.0004	0.0004	0.0511	0.0004
		Total	0.1936	0.0063	0.0266	0.0063	0.0074	0.0123	0.0004	0.2528	0.0004
MN-2	3	Kept	0.2470	0.0163	0.0207	0.0004	0	0.0084	0.0006	0.2934	0.0002
		Released	0.0439	0	0.0002	0.0092	0	0	0	0.0532	0
		Total	0.2909	0.0163	0.0209	0.0096	0.0000	0.0084	0.0006	0.3466	0.0002
MN-3	4	Kept	0.2078	0.0463	0.0940	0	0	0.0393	0	0.3873	0
		Released	0.0026	0	0.0004	0.0110	0	0	0	0.0141	0
		Total	0.2104	0.0463	0.0944	0.0110	0	0.0393	0	0.4014	0
Lower	1,2	Kept	0.1525	0.0045	0.0114	0.0001	0.0192	0.0007	0.0004	0.1887	0.0078
		Released	0.0065	0.0001	0.0001	0.0017	0	0	0.0001	0.0085	0.0003
		Total	0.1589	0.0046	0.0114	0.0018	0.0192	0.0007	0.0005	0.1971	0.0081
Upper	3,4	Kept	0.2344	0.0259	0.0442	0.0003	0	0.0183	0.0004	0.3236	0.0001
		Released	0.0306	0	0.0003	0.0098	0	0	0	0.0407	0
		Total	0.2650	0.0259	0.0445	0.0101	0	0.0183	0.0004	0.3642	0.0001
Total	1,2,3,4	Kept	0.1619	0.0070	0.0151	0.0001	0.0170	0.0027	0.0004	0.2042	0.0069
		Released	0.0092	0.0001	0.0001	0.0026	0	0	0.0001	0.0122	0.0003
		Total	0.1711	0.0071	0.0152	0.0027	0.0170	0.0027	0.0005	0.2164	0.0072

¹ Great Lakes Fishery Commission Statistical Districts

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

³ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁴ Includes harvests of 18 Brown Trout, 3 kamloops Rainbow Trout, and 5 other salmon, and releases of 6 kamloops Rainbow Trout. Anglers also kept 5 Northern Pike, 4 Cisco and 8 Lake Whitefish and released 1 Northern Pike.

Table 13. Catch rate (fish* hour⁻¹) by species, location, and shore area for all anglers in the 2020 Lake Superior summer creel survey¹. SE in parentheses.

District ²	Cluster ³	Fate	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other ⁴ Salmonines	Total Salmonines	Walleye
MN-1	1	Kept	0.1389	0.0037	0.0096	0	0.0168	0	0.0003	0.1693	0.0072
		(SE)	(0.0505)	(0)	(0.0052)	(0)	(0)	(0)	(0)	(0.0419)	(0.0022)
		Released	0.0036	0.0003	0.0001	0.0014	0	0	0.0001	0.0055	0.0003
		(SE)	(0)	(0.0013)	(0)	(0.0013)	(0)	(0)	(0)	(0.0028)	(0)
		Total	0.1425	0.0040	0.0097	0.0014	0.0168	0	0.0004	0.1748	0.0074
		(SE)	(0.0505)	(0.0013)	(0.0052)	(0.0013)	(0)	(0)	(0)	(0.0420)	(0.0022)
MN-1	2	Kept	0.1058	0.0079	0.0044	0.0001	0.0006	0.0006	0	0.1194	0.0002
		(SE)	(0.0500)	(0.0044)	(0.0022)	(0)	(0.0004)	(0)	(0)	(0.0515)	(0.0004)
		Released	0.0502	0.0007	0.0002	0.0015	0.0006	0.0004	0	0.0536	0
		(SE)	(0.0287)	(0.0008)	(0.0004)	(0.0015)	(0.0006)	(0.0005)	(0)	(0.0264)	(0)
		Total	0.1559	0.0086	0.0046	0.0016	0.0013	0.0010	0	0.1730	0.0003
		(SE)	(0.0577)	(0.0045)	(0.0022)	(0.0015)	(0.0007)	(0.0005)	(0)	(0.0579)	(0.0004)
MN-2	3	Kept	0.1097	0.0267	0.0227	0.0001	0	0.0029	0.0001	0.1622	0
		(SE)	(0.0462)	(0.0153)	(0.0135)	(0)	(0)	(0.0021)	(0)	(0.0732)	(0)
		Released	0.0264	(0)	(0)	0.0087	0	0	0	0.0351	0
		(SE)	(0.0189)	(0)	(0)	(0.0065)	(0)	(0)	(0)	(0.0168)	(0)
		Total	0.1361	0.0267	0.0228	0.0087	0	0.0029	0.0001	0.1973	0
		(SE)	(0.0499)	(0.0153)	(0.0135)	(0.0065)	(0)	(0.0021)	(0)	(0.0751)	(0)
MN-3	4	Kept	0.1331	0.0280	0.0530	0.0043	0	0.0323	0.0009	0.2516	0
		(SE)	(0.0581)	(0.0152)	(0.0257)	(0.0058)	(0)	(0.0217)	(0.0011)	(0.0712)	(0)
		Released	0.0401	0.0017	0.0021	0.0149	0	0.0042	0.0007	0.0638	0
		(SE)	(0.0268)	(0.0018)	(0.0023)	(0.0099)	(0)	(0.0031)	(0.0009)	(0.0272)	(0)
		Total	0.1733	0.0298	0.0551	0.0192	0	0.0365	0.0016	0.3155	0
		(SE)	(0.0640)	(0.0153)	(0.0258)	(0.0115)	(0)	(0.0219)	(0.0014)	(0.0762)	(0)
Lower	1 & 2	Kept	0.1231	0.0057	0.0071	0.0001	0.0091	0.0003	0.0002	0.1455	0.0039
		(SE)	(0.0430)	(0.0037)	(0.0020)	(0)	(0.0003)	(0)	(0)	(0.0469)	(0.0005)
		Released	0.0258	0.0005	0.0001	0.0015	0.0003	0.0002	0.0001	0.0285	0.0002
		(SE)	(0.0242)	(0.0007)	(0.0003)	(0.0012)	(0.0005)	(0.0005)	(0)	(0.0245)	(0)
		Total	0.1489	0.0062	0.0073	0.0015	0.0094	0.0005	0.0002	0.1740	0.0040
		(SE)	(0.0493)	(0.0038)	(0.0020)	(0.0012)	(0.0006)	(0.0005)	(0.0012)	(0.0548)	(0.0005)
Upper	3 & 4	Kept	0.1135	0.0261	0.0325	0.0015	0	0.0132	0.0004	0.1872	0
		(SE)	(0.0362)	(0.0110)	(0.0132)	(0.0023)	(0)	(0.0088)	(0.0005)	(0.0529)	(0)
		Released	0.0302	0.0006	0.0008	0.0105	0	0.0015	0.0003	0.0438	0
		(SE)	(0.0156)	(0.0007)	(0.0009)	(0.0056)	(0)	(0.0012)	(0.0004)	(0.0141)	(0)
		Total	0.1437	0.0267	0.0332	0.0121	0	0.0146	0.0006	0.2310	0
		(SE)	(0.0394)	(0.0110)	(0.0132)	(0.0061)	(0)	(0.0089)	(0.0006)	(0.0547)	(0)
Total	1,2,3,4	Kept	0.1200	0.0123	0.0153	0.0005	0.0061	0.0045	0.0002	0.1590	0.0026
		(SE)	(0.0289)	(0.0053)	(0.0059)	(0.0010)	(0.0002)	(0.0039)	(0.0002)	(0.0310)	(0.0003)
		Released	0.0272	0.0005	0.0003	0.0044	0.0002	0.0006	0.0001	0.0334	0.0001
		(SE)	(0.0152)	(0.0005)	(0.0005)	(0.0025)	(0.0003)	(0.0006)	(0.0002)	(0.0156)	(0)
		Total	0.1472	0.0129	0.0157	0.0049	0.0063	0.0051	0.0004	0.1924	0.0027
		(SE)	(0.0327)	(0.0053)	(0.0059)	(0.0027)	(0.0004)	(0.0039)	(0.0003)	(0.0347)	(0.0003)

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

² Great Lakes Fishery Commission Statistical Districts

³ Covid-19 pandemic-related restrictions delayed this survey until June 24, 2020. May-June results are not included in this table.

⁴ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁵ Includes harvests of 18 Brown Trout, 3 kamloops Rainbow Trout, 17 Atlantic Salmon, and 5 unknown salmon, and releases of 6 kamloops and 12 unknown salmon. Anglers also kept 5 Northern Pike, 8 Lake Whitefish, 252 Cisco, and released 51 Cisco and 1 Northern Pike.

Table 14. Percent of private sport angling parties, by angler type, that caught specific numbers of fish in the 2020 Lake Superior summer creel survey¹.

	Lake Trout		Coho Salmon		Chinook Salmon		Steelhead		Siscowet		Pink Salmon		Total Salmonines	
	Boat	Shore	Boat	Shore	Boat	Shore	Boat	Shore	Boat	Shore	Boat	Shore	Boat	Shore
0	50.9	96.7	87.6	93.3	86.2	96.7	95.0	100	99.5	100	94.6	100	37.1	86.7
1	21.2	3.3	10.1	6.7	9.4	3.3	4.4	0	0.5	0	3.3	0	21.5	13.3
2	10.0	0	1.6	0	3.1	0	0.3	0	0	0	1.2	0	14.8	0
3	8.1	0	0.5	0	0.6	0	0.3	0	0	0	0.2	0	11.1	0
4	3.7	0	0	0	0.5	0	0	0	0	0	0.3	0	5.9	0
5	1.6	0	0.2	0	0.2	0	0	0	0	0	0	0	3.1	0
6	1.4	0	0	0	0	0	0	0	0	0	0	0	1.7	0
7	0.5	0	0	0	0	0	0	0	0	0	0	0	1.4	0
8	0.6	0	0	0	0	0	0	0	0	0	0.2	0	0.8	0
9	0.5	0	0	0	0	0	0	0	0	0	0	0	0.6	0
10	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0.3	0	0	0	0	0	0	0	0	0	0	0	0.6	0
>=12	1.0	0	0	0	0	0	0	0	0	0	0.2	0	1.4	0

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

Table 15. Percent of chartered angling parties that caught specific numbers of fish in the 2020 Lake Superior summer creel survey¹.

Number of Fish Caught	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other Salmonines	Total Salmonines
0	2.9	97.2	74.8	95.8	70.5	100	100	2.8
1	18.3	2.8	18.3	1.4	19.7	0	0	9.9
2	21.1	0	4.2	2.8	5.6	0	0	15.5
3	16.9	0	1.4	0	2.8	0	0	15.5
4	7.0	0	0	0	0	0	0	12.7
5	9.9	0	1.4	0	1.4	0	0	9.9
6	8.5	0	0	0	0	0	0	5.6
7	7.0	0	0	0	0	0	0	5.6
8	1.4	0	0	0	0	0	0	11.3
9	1.4	0	0	0	0	0	0	4.2
10	1.4	0	0	0	0	0	0	0
11	2.8	0	0	0	0	0	0	4.2
>=12	1.4	0	0	0	0	0	0	2.8

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

Table 16. Length-frequency distribution (inches) and sample size of harvested salmonines by private sport boat and shore anglers in the 2020 Lake Superior summer creel survey¹. Sample size was lower due to covid-19 pandemic effects.

Species	Lake Trout	Coho Salmon	Chinook Salmon	Kamloops	Steelhead	Siscowet	Pink Salmon
Length (in)	611	98	127		5	1	58
6.5 to 7.4							
7.5 to 8.4							
8.5 to 9.4							
9.5 to 10.4							
10.5 to 11.4							
11.5 to 12.4		3					
12.5 to 13.4			1				
13.5 to 14.4	1	1	1				1
14.5 to 15.4	2		1				3
15.5 to 16.4	13	3					21
16.5 to 17.4	22	3					23
17.5 to 18.4	52	12	2				8
18.5 to 19.4	37	5	1				2
19.5 to 20.4	96	31	8				
20.5 to 21.4	37	18	4				
21.5 to 22.4	104	18	26		1	1	
22.5 to 23.4	60	2	11				
23.5 to 24.4	75	2	26		1		
24.5 to 25.4	48		22		2		
25.5 to 26.4	22		9		1		
26.5 to 27.4	17		10				
27.5 to 28.4	7		2				
28.5 to 29.4	2		1				
29.5 to 30.4	4		2				
30.5 to 31.4	2						
31.5 to 32.4	4						
32.5 to 33.4	1						
33.5 to 34.4	2						
34.5 to 35.4							
35.5 to 36.4	2						
36.5 to 37.4							
37.5 to 38.4							
38.5 to 39.4							
39.5 to 40.4	1						
>40.4							
Average	19.4	21.1	23.5		24.4	20	16.8
Length (inch)							

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

Table 17. Length-frequency distribution (inches) and sample size of harvested salmonines by charter anglers¹ in the 2019 Lake Superior summer creel survey². Sample size was lower due to covid-19 pandemic effects.

	Lake Trout	Coho Salmon	Chinook Salmon	Kamloops	Steelhead	Siscowet	Pink Salmon
Length (in)	259	2	27			33	
6.5 to 7.4							
7.5 to 8.4							
8.5 to 9.4							
9.5 to 10.4							
10.5 to 11.4							
11.5 to 12.4			2				
12.5 to 13.4			1				
13.5 to 14.4	0		1				
14.5 to 15.4	1		1				
15.5 to 16.4	5		2				
16.5 to 17.4	11					2	
17.5 to 18.4	22	1					
18.5 to 19.4	22					2	
19.5 to 20.4	31					6	
20.5 to 21.4	33		1			4	
21.5 to 22.4	28	1	2			8	
22.5 to 23.4	18		1			6	
23.5 to 24.4	24		4			1	
24.5 to 25.4	12		5			3	
25.5 to 26.4	17		3			1	
26.5 to 27.4	11		3				
27.5 to 28.4	8		1				
28.5 to 29.4	6						
29.5 to 30.4	3						
30.5 to 31.4	3						
31.5 to 32.4	2						
32.5 to 33.4	1						
33.5 to 34.4							
34.5 to 35.4							
35.5 to 36.4							
36.5 to 37.4							
37.5 to 38.4							
38.5 to 39.4							
39.5 to 40.4							
>40.4							
Average	22.2	20.1	22.0			21.7	
Length (inch)							

¹ Includes clients of chartered boat trips and excludes personal trips by licensed charter captains.

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

Table 18. Length-frequency distribution (inches) and sample size of released salmonines by private sport boat and shore anglers in the 2020 Lake Superior summer creel survey¹. Sample size was lower due to covid-19 pandemic effects.

	Lake Trout	Coho Salmon	Chinook Salmon	Kamloops	Steelhead	Siscowet	Pink Salmon	Brook Trout
Length (in)	229	5	4		33	2	10	
6.5 to 7.4								
7.5 to 8.4		1						
8.5 to 9.4		1						
9.5 to 10.4	1							
10.5 to 11.4								
11.5 to 12.4		2	1		1		1	
12.5 to 13.4								
13.5 to 14.4	6						5	
14.5 to 15.4	3						1	
15.5 to 16.4	10						2	
16.5 to 17.4	13							
17.5 to 18.4	17		2				1	
18.5 to 19.4	4	1						
19.5 to 20.4	33					1		
20.5 to 21.4	9							
21.5 to 22.4	16				4			
22.5 to 23.4	7				1			
23.5 to 24.4	14				6			
24.5 to 25.4	13				9			
25.5 to 26.4	12		1		5	1		
26.5 to 27.4	11				5			
27.5 to 28.4	12				2			
28.5 to 29.4	11							
29.5 to 30.4	11							
30.5 to 31.4	8							
31.5 to 32.4	8							
32.5 to 33.4	2							
33.5 to 34.4	4							
34.5 to 35.4	3							
35.5 to 36.4	1							
36.5 to 37.4								
37.5 to 38.4								
38.5 to 39.4								
39.5 to 40.4								
>40.4								
Average	23.1	12.0	23.5		24.7	23.0	14.8	
Length (inch)								

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

Table 19. Length-frequency distribution (inches) and sample size of released salmonines by charter anglers¹ in the 2020 Lake Superior summer creel survey². Sample size was lower due to covid-19 pandemic effects.

	Lake Trout	Coho Salmon	Chinook Salmon	Kamloops	Steelhead	Siscowet	Pink Salmon
Length(in)	8				5		
6.5 to 7.4							
7.5 to 8.4							
8.5 to 9.4							
9.5 to 10.4							
10.5 to 11.4							
11.5 to 12.4							
12.5 to 13.4							
13.5 to 14.4							
14.5 to 15.4							
15.5 to 16.4							
16.5 to 17.4							
17.5 to 18.4	4						
18.5 to 19.4							
19.5 to 20.4	1				1		
20.5 to 21.4							
21.5 to 22.4							
22.5 to 23.4							
23.5 to 24.4					1		
24.5 to 25.4							
25.5 to 26.4					2		
26.5 to 27.4							
27.5 to 28.4							
28.5 to 29.4							
29.5 to 30.4							
30.5 to 31.4	1						
31.5 to 32.4					1		
32.5 to 33.4							
33.5 to 34.4							
34.5 to 35.4							
35.5 to 36.4	1						
36.5 to 37.4							
37.5 to 38.4							
38.5 to 39.4							
39.5 to 40.4							
>40.4							
Average	26.7				25.6		
Length (inch)							

¹ Includes clients of chartered boat trips and excludes personal trips by licensed charter captains.

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

Table 20. Average weight¹ (pounds) of harvested fish by species, location, and shore area for private boat and shore anglers in the 2020 Lake Superior summer creel survey². SE in parentheses.

District ³	Cluster ⁴	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Walleye
	Sample size (n)	611	98	127	5	1	58	2
MN-1	1	2.96 (3.27)	- -	2.56 (4.11)	- -	- -	- -	3.77 (6.45)
MN-1	2	3.39 (2.26)	2.03 (1.55)	2.56 (2.51)	- -	3.14 (4.99)	- -	3.77 (6.08)
MN-2	3	2.67 (1.96)	2.35 (1.78)	4.32 (3.60)	- -	- -	1.33 (1.95)	- -
MN-3	4	3.04 (2.22)	2.49 (2.39)	4.32 (3.78)	3.69 (5.37)	- -	1.33 (1.48)	- -
MN-1	Lower Shore	3.35 (2.05)	2.03 (1.55)	2.56 (2.17)	- -	3.14 (4.99)	- -	3.77 (4.43)
MN-2 & 3	Upper Shore	2.84 (1.47)	2.40 (1.43)	4.33 (2.64)	3.69 (5.37)	- -	1.33 (1.35)	- -
	Total Shore	3.13 (1.31)	2.31 (1.32)	4.11 (2.29)	3.69 (5.37)	3.14 (4.99)	1.33 (1.35)	3.77 (4.43)

¹ Due to covid restrictions in 2020, weights were calculated from length-weight regression, thus sample size is based on mostly unweighed fish.

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

³ Great Lakes Fishery Commission Statistical Districts

⁴ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

Table 21. Average¹ weight (pounds) of harvested fish by species, location, and shore area for charter anglers² in the 2020 Lake Superior summer creel survey³. SE in parentheses.

District ⁴	Cluster ⁵	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Walleye
	Sample size (n)	259	2	27	0	23	0	3
MN-1	1	3.16 (0.42)	2.07 (0.64)	3.53 (0.36)	- -	2.72 (0.36)	1.3 (0.96)	3.77 (1.13)
MN-1	2	3.50 (0.75)	2.07 (0.60)	3.22 (0.58)	3.69 (1.92)	2.74 (0.49)	1.3 (0.47)	- -
MN-2	3	3.47 (0.24)	2.07 (0.63)	4.60 (1.24)	3.69 (2.47)	- -	1.3 (0.48)	3.77 (1.13)
MN-3	4	3.57 (0.46)	2.07 (0.66)	4.60 (1.20)	- -	- -	1.3 (0.61)	- -
MN-1	Lower Shore	3.17 (0.40)	2.07 (0.59)	3.49 (0.32)	3.69 (1.92)	2.72 (0.30)	1.30 (0.45)	3.77 (1.13)
MN-2 & 3	Upper Shore	3.50 (0.21)	2.15 (0.37)	3.90 (0.79)	3.69 (2.47)	- -	1.30 (0.45)	3.77 (1.13)
	Total Shore	3.23 (0.34)	2.07 (0.39)	3.86 (0.37)	3.69 (1.53)	2.72 (0.30)	1.30 (0.36)	3.77 (1.13)

¹ Due to covid restrictions in 2020, weights were calculated from length-weight regression, thus sample size is based on mostly unweighed fish.

² Includes clients of chartered boat trips and excludes personal trips by licensed charter captains.

³ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

⁴ Great Lakes Fishery Commission Statistical Districts

⁵ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

Table 22. Yield¹ (pounds) by species, location, and shore area for private sport boat and shore anglers in the 2020 Lake Superior summer creel survey². SE values are in parentheses.

District ³	Cluster ⁴	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other Salmonines ⁴	Total Salmonines	Walleye ⁵
MN-1	1	1,779 (1,421)	0 (0)	110 (126)	0 (0)	0 (0)	0 (0)	0 (0)	1,868 (1,472)	49 (28)
MN-1	2	18,446 (8,807)	855 (464)	430 (303)	0 (0)	41 (24)	0 (0)	0 (0)	19,773 (8,824)	49 (28)
MN-2	3	6,755 (3,554)	1,941 (1,065)	2,917 (1,747)	0 (0)	0 (0)	77 (81)	0 (0)	11,690 (4,102)	0 0
MN-3	4	6,529 (3,361)	1,114 (773)	3,582 (2,287)	310 (174)	0 (0)	730 (584)	96 (54)	12,361 (4,179)	0 0
MN-1	1 & 2	20,225 (8,921)	855 (464)	540 (328)	0 (0)	41 (24)	0 (0)	0 (0)	21,662 (8,939)	98 (40)
MN-2 & 3	3 & 4	13,284 (4,892)	3,056 (1,316)	6,499 (2,878)	310 (174)	0 (0)	807 (589)	96 (54)	24,051 (5,856)	0 0
Total		33,509 (10,174)	3,911 (1,395)	7,039 (2,896)	310 (174)	41 (24)	807 (589)	96 (54)	45,712 (10,686)	98 (40)

¹ Estimates are rounded to the nearest pound.

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

³ Great Lakes Fishery Commission Statistical Districts

⁴ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁵ Includes Atlantic Salmon (96 lb). Anglers also harvested Cisco (439 lb).

Table 23. Yield¹ (pounds) by species, location, and shore area for charter anglers in the 2020 Lake Superior summer creel survey². SE values are in parentheses.

District ³	Cluster ⁴	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other Salmonines ⁵	Total Salmonines	Walleye
MN-1	1	24,757 (10,423)	470 (375)	1,904 (1,146)	0 (0)	2,773 (1,657)	3 (0)	89 (86)	29,995 (10,623)	1,591 (449)
MN-1	2	1,475 (1,276)	37 (29)	244 (186)	22 (31)	58 (40)	44 (23)	0 (0)	1,881 (1,291)	0 (0)
MN-2	3	4,106 (1,999)	161 (128)	455 (508)	7 (12)	0 (0)	52 (28)	9 (7)	4,791 (2,067)	4 (2)
MN-3	4	1,681 (1,138)	217 (177)	980 (1,073)	0 (4)	0 (0)	116 (70)	0 (0)	2,994 (1,576)	0 (0)
MN-1	1 & 2	26,232 (10,501)	507 (376)	2,148 (1,161)	22 (31)	2,830 (1,657)	47 (23)	89 (86)	31,876 (10,701)	1,591 (449)
MN-2 & 3	3 & 4	5,788 (2,300)	379 (218)	1,435 (1,187)	7 (12)	0 (0)	168 (75)	9 (7)	7,786 (2,599)	4 (2)
Total		32,020 (10,750)	886 (435)	3,584 (1,660)	30 (33)	2,830 (1,657)	215 (78)	98 (86)	39,662 (11,012)	1,595 (449)

¹ Estimates are rounded to the nearest pound.

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

³ Great Lakes Fishery Commission Statistical Districts

⁴ Cluster 1=Duluth, Cluster 2=McQuade-Two Harbors, Cluster 3=Twin Points-Taconite Harbor, Cluster 4=Grand Marais-Hovland.

⁵ Includes Brown Trout (85 lb), kamloops Rainbow Trout (13 lb), and unknown salmon (25 lb). Anglers harvested Northern Pike (20 lb), Cisco (5 lb), and Lake Whitefish (29 lb).

Table 24. Yield¹ (pounds) by species, location, and shore area for all anglers in the 2020 Lake Superior summer creel survey². SE values are in parentheses.

District ³	Cluster ⁴	Lake Trout	Coho Salmon	Chinook Salmon	Steelhead	Siscowet	Pink Salmon	Other Salmonines ⁵	Total Salmonines	Walleye
MN-1	1	26,536 (10,519)	470 (375)	2,014 (1,153)	0 (0)	2,773 (1,657)	3 (0)	89 (86)	31,884 (10,718)	1,640 (450)
MN-1	2	19,922 (8,899)	893 (465)	674 (355)	22 (31)	98 (47)	44 (23)	0 (0)	21,653 (8,918)	49 (28)
MN-2	3	10,861 (4,078)	2,103 (1,073)	3,372 (1,819)	7 (12)	0 (0)	129 (86)	9 (7)	16,482 (4,593)	4 (2)
MN-3	4	8,210 (3,548)	1,332 (793)	4,562 (2,526)	310 (174)	0 (0)	845 (588)	96 (54)	15,355 (4,467)	0 (0)
MN-1	1 & 2	46,458 (13,779)	1,363 (597)	2,689 (1,206)	22 (31)	2,871 (1,657)	47 (23)	89 (86)	53,538 (13,943)	1,689 (451)
MN-2 & 3	3 & 4	19,071 (5,406)	3,434 (1,334)	7,934 (3,113)	317 (174)	0 (0)	975 (595)	104 (55)	31,836 (6,407)	4 (2)
Total		65,529 (14,801)	4,797 (1,462)	10,623 (3,338)	339 (177)	2,871 (1,657)	1,022 (595)	193 (102)	85,374 (15,345)	1,693 (451)

¹ Estimates are rounded to the nearest pound.

² Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

³ Great Lakes Fishery Commission Statistical Districts

⁴ Other Salmonines included Brown Trout (607 lb.), kamloops Rainbow Trout (141 lb.), and Brook Trout (9 lb.).

⁵ Includes Brown Trout (85 lb), kamloops Rainbow Trout (13 lb), Atlantic salmon (95 lb), and unknown salmon (25 lb). Anglers harvested Northern Pike (20 lb), Cisco (444 lb), and Lake Whitefish (29 lb).

Table 25. Age distribution, in percent, of harvested lean Lake Trout (wild and stocked) for private sport boat and shore anglers in the 2020 Lake Superior summer creel survey¹. n=517.

Age	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI+
%	0	0.58	7.16	25.34	22.05	14.89	8.51	4.64	4.06	3.48	2.13	1.55	5.61

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

Table 26. Age distribution, in percent, of harvested lean Lake Trout (wild and stocked) for all chartered anglers in the 2020 Lake Superior summer creel survey¹. n=245.

Age	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI+
%	0	0.41	10.61	26.53	16.73	11.43	8.57	5.71	5.71	3.67	2.45	1.63	6.94

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

Table 27. Age distribution, in percent, of harvested lean Lake Trout (wild and stocked) for all anglers in the 2020 Lake Superior summer creel survey¹. n=762.

Age	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI+
%	0	0.53	8.31	25.86	20.45	13.85	8.58	5.01	4.62	3.56	2.24	1.58	5.41

¹ Covid-19 pandemic effects delayed this survey until June 24, 2020. May-June results for private sport anglers are not included in this table.

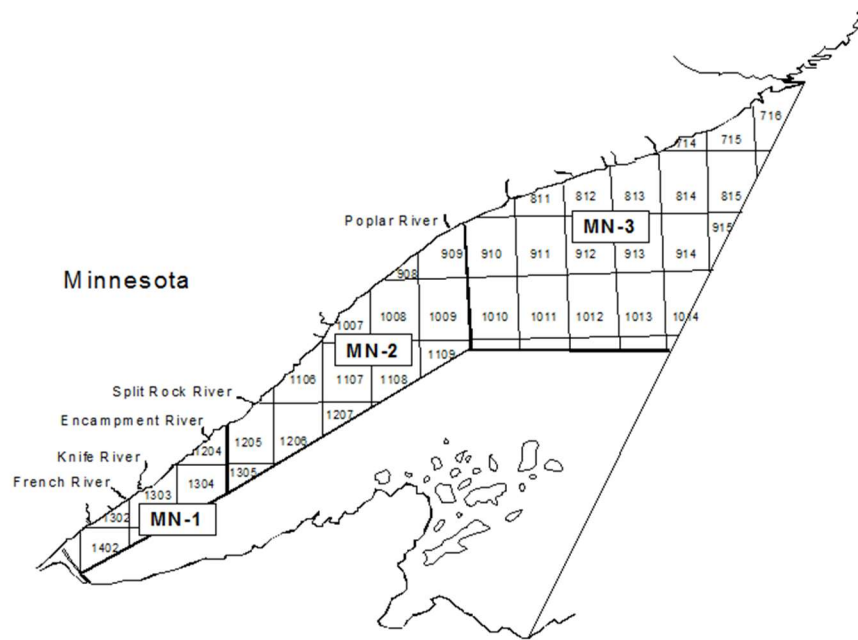


Figure 1. Statistical districts in Minnesota waters of Lake Superior.

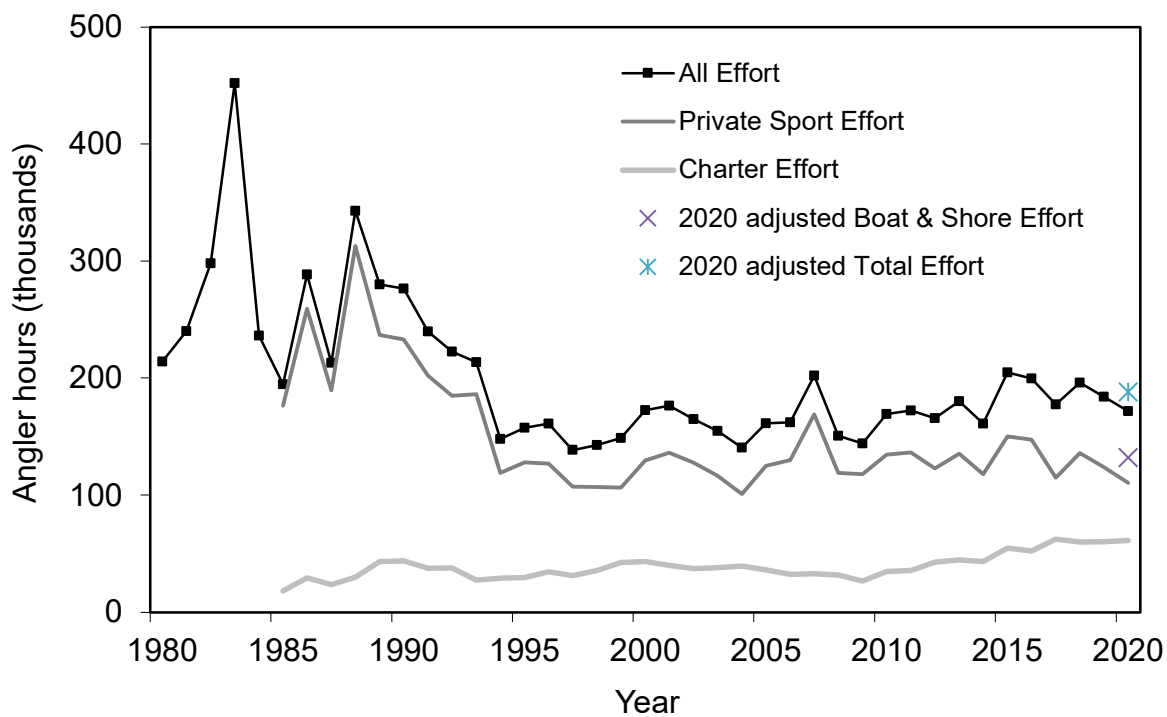


Figure 2. Angling effort in the Lake Superior summer creel survey, 1980-2020. The design of the summer Lake Superior creel survey was changed in 1994 (Halpern 1995a,b).

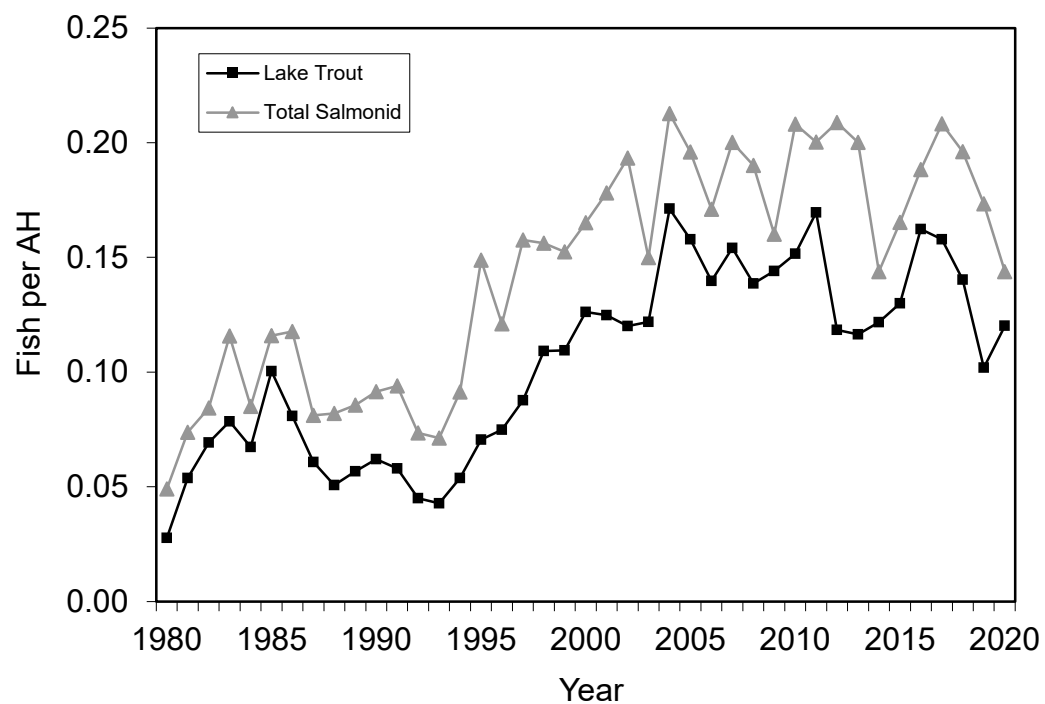


Figure 3. Harvest rate for Lake Trout and all Salmonines combined in the Lake Superior summer creel survey, 1980-2020.

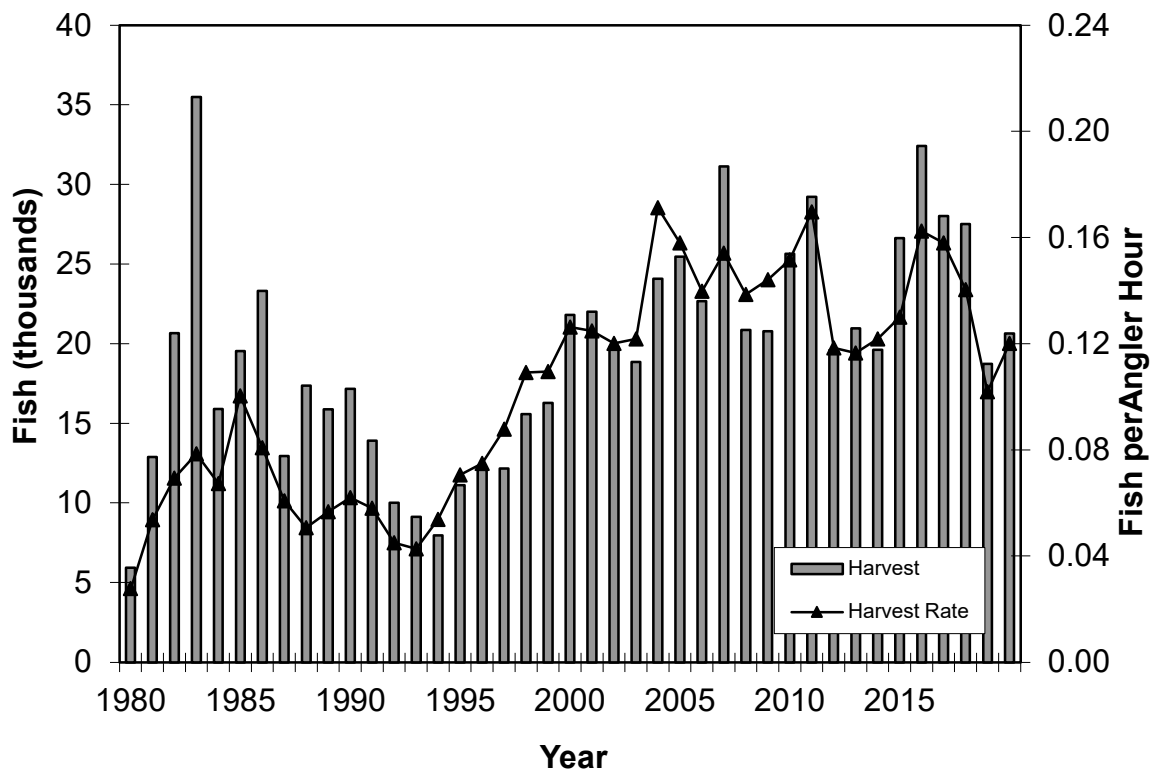


Figure 4. Lake Trout harvest and harvest rate in the Lake Superior summer creel survey, 1980-2020.

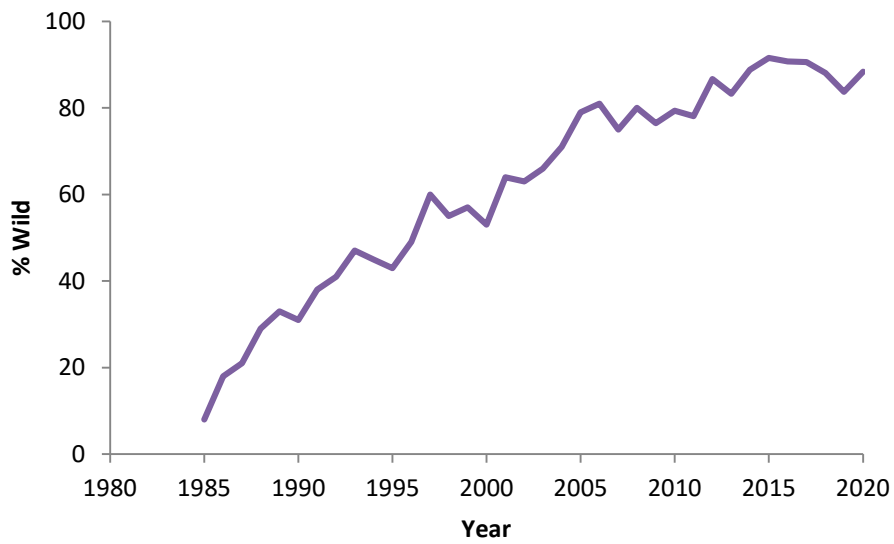


Figure 5. Percent wild Lake Trout observed by creel clerks in the Lake Superior summer creel survey, 1985-2020.

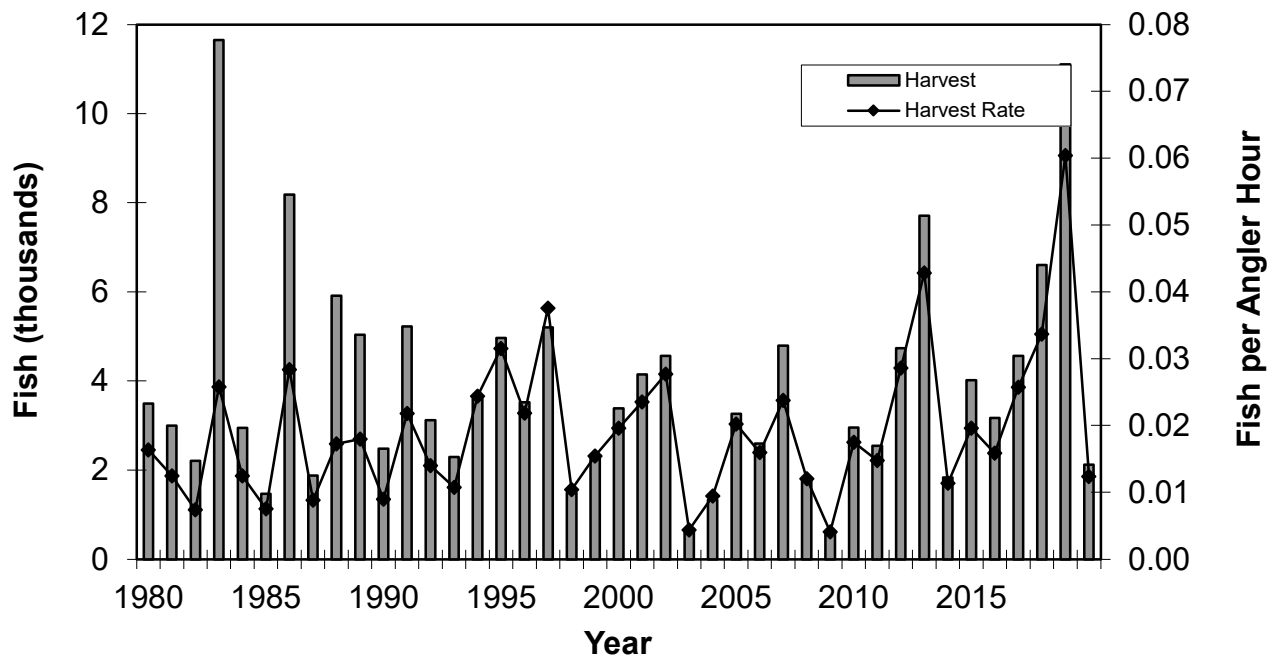


Figure 6. Coho Salmon harvest and harvest rate in the Lake Superior summer creel survey, 1980-2020.

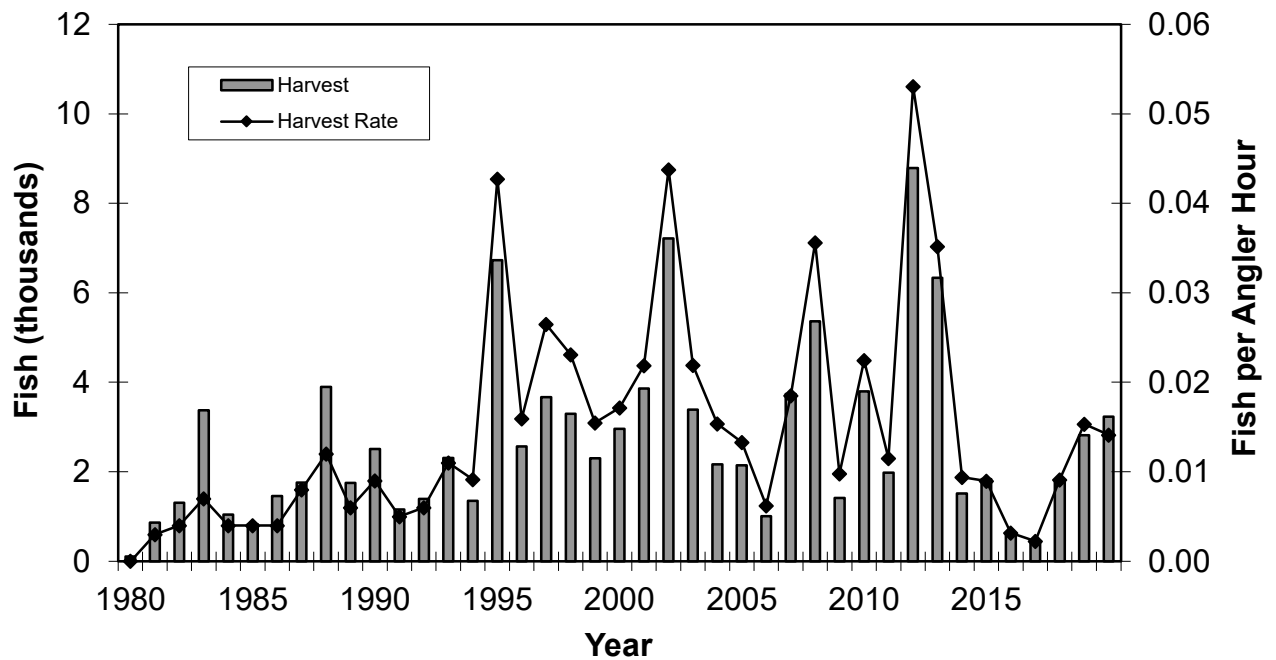


Figure 7. Chinook Salmon harvest and harvest rate in the Lake Superior summer creel survey, 1980-2020.

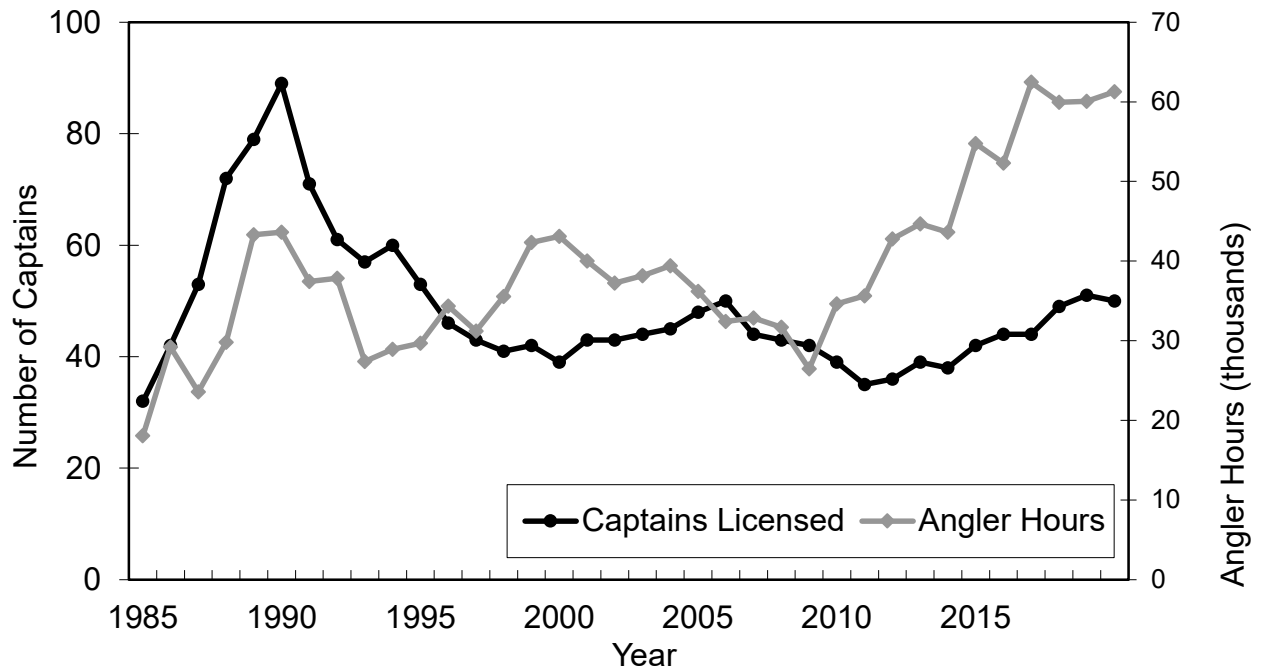


Figure 8. Number of licensed charter captains and fishing effort (angler hours) in the charter fishery; Minnesota waters of Lake Superior, 1985-2020.

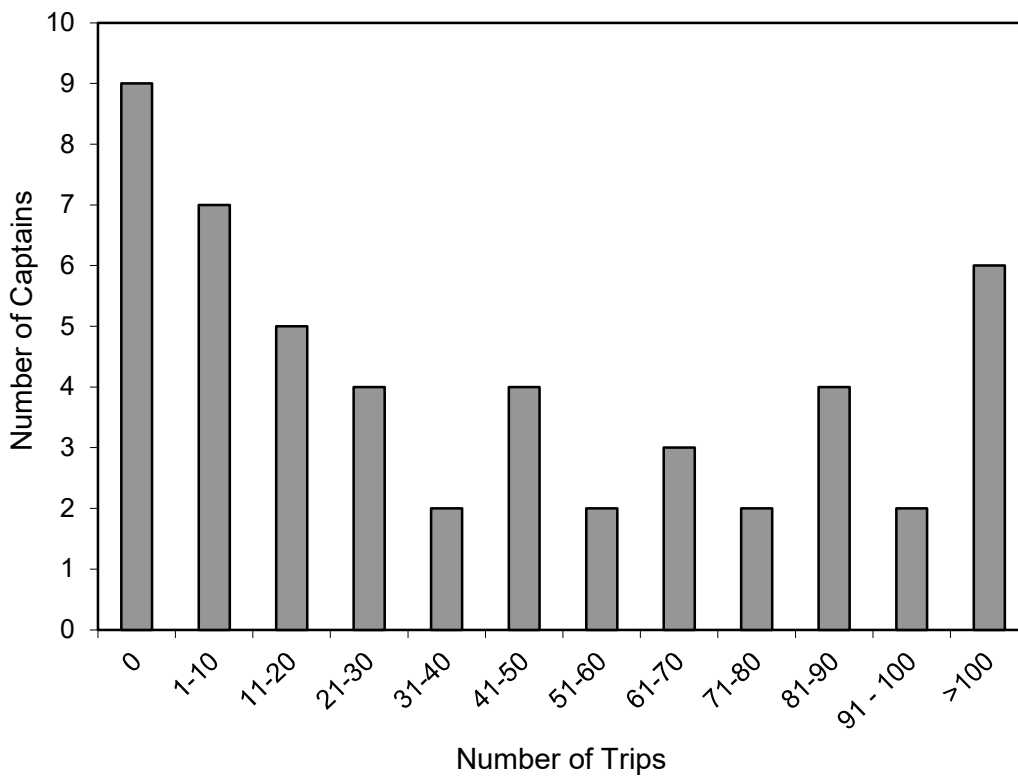


Figure 9. Number of charter captains making specific numbers of trips in Minnesota waters of Lake Superior, 2020.