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

# COMPLETION REPORT FOR THE MINNESOTA WATERS OF LAKE SUPERIOR

# 2025

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## Executive Summary

The overall catch rate of Lake Trout (*Salvelinus namaycush)* in the May Lake Trout assessment was 16.3 fish per 1,000 feet of net and above the third quartile (interquartile range: 8.8-14.5) of the 46-year dataset. CPUE (catch per unit effort) by management zone was 18.4 in MN-1, 10.1 in MN-2, and 18.6 in MN-3. Shorewide, 99% of Lake Trout were wild fish. The shorewide CPUE shows a continued increasing trend in the abundance of wild Lake Trout. The Sea Lamprey (*Petromyzon marinus*) wounding rate in the May Lake Trout assessment was above the target level (less than 5.0 fresh wounds per 100 Lake Trout) at 9.0 fresh wounds per 100 Lake Trout. Wounding rates were 14.7 in MN-1, 5.1 in MN-2, and 6.0 in MN-3. Mean length-at-age for Lake Trout caught in the May assessment was larger for fish caught post-coregonid boom compared to pre-boom.

In the juvenile Lake Trout assessment, the overall CPUE was 8.1 fish per 1,000 feet of net, which was below the interquartile range of the 46-year dataset (14.4-25.1) and the second worst over the time series. CPUE by management zone was 7.4 in MN-1, 8.6 in MN-2, and 8.8 in MN-3. Shorewide, 100% of juvenile Lake Trout captured were wild, which was the first time no clipped hatchery juveniles were captured in this assessment. Despite the low CPUE, recruitment appears to be relatively stable.

In the summer expanded commercial Lake Trout assessment, commercial operators in MN-1 harvested 282 Lake Trout and the CPUE was 18.2 fish per 1,000 feet of net. Lake Trout harvest in MN-2 was 1,101fish and the CPUE was 13.7 fish per 1,000 feet of net. In MN-3, 2,657 Lake Trout were harvested and the CPUE was 17.7 fish per 1,000 feet of net. Collectively, commercial operators harvested 73% of the available quota. Commercial operators accounted for 10% of the total shorewide Lake Trout harvest between sport (35,501) and commercial (4,040) fishers combined.

The estimated biomass of spawning-size Cisco (*Coregonus artedi*) from the fall hydroacoustic survey was 8.66 million pounds and represents a 27% decrease from 2024. Offshore zones accounted for 89% of the total biomass and nearshore zones accounted for 11%. Cisco from the 2022 year-class showed a difference of over 100% between the smallest (7.8 inches) and largest (15.9 inches) individuals sampled in the fall. The fastest growing Cisco from the 2022 year-class were already contributing considerably (40%) to the fall commercial catch. The smaller age-3 Cisco should recruit to the commercial fishery in the next year or two and give both managers and commercial operators insight into the impact of a significant recruitment event on the fishery.

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## Introduction

This report summarizes the assessment work conducted by the Lake Superior Area Office in Minnesota's portion of Lake Superior in 2025 including the May Lake Trout (*Salvelinus namaycush)*, juvenile Lake Trout, summer expanded commercial Lake Trout, and Cisco (*Coregonus artedi*) assessments.

Lake Trout are the top native predator in Lake Superior and historically supported important recreational and commercial fisheries. Rehabilitation of self-sustaining Lake Trout stocks was the major goal for agencies around Lake Superior since the collapse of the Lake Trout fishery due to commercial over-exploitation and predation by Sea Lamprey (*Petromyzon marinus*) in the mid-1950s. Through Sea Lamprey control, stocking, and controlled harvest, rehabilitation has been so successful around the lake that in 2024 the Lake Superior Committee of the Great Lakes Fisheries Commission deemed Lake Trout fully rehabilitated for most of Lake Superior. Once again, Lake Trout is the primary species caught by anglers fishing Minnesota waters, supporting a robust fishery with an average annual catch of 33,380 fish (2016-2025) (Beckman 2026), and commercial harvest of Lake Trout occurs in all three management zones in Minnesota waters.

There are four recognized morphotypes of Lake Trout in Lake Superior: lean, Siscowet, humper, and redfin (Muir et al. 2014). The humper and redfin morphotypes are generally not encountered in the Minnesota portion of Lake Superior. However, the deepwater morphotype of Lake Trout, known as the Siscowet, along with the lean Lake Trout morphotype, are commonly observed in Minnesota waters. For consistency throughout this report, lean Lake Trout will be referred to as "Lake Trout" and Siscowet Lake Trout will be referred to as "Siscowet".

Cisco are an important native forage species in Lake Superior and have also supported a commercial fishery since the late 1800s. Cisco stocks crashed in the 1950s, and although populations have rebounded, they remain well below historic levels. Cisco population dynamics are monitored by hydroacoustic surveys, assessment netting, sampling the commercial catch, and analyzing commercial fishing records. Commercial harvest for Cisco, Lake Trout, and other species is summarized thoroughly in an annual commercial fishing report (Blankenheim 2026).

Chinook Salmon (*Oncorhynchus tshawytscha)*, Coho Salmon (*O. kisutch)*, and Rainbow Trout (*O. mykiss*) are generally not vulnerable to MN DNR assessment gill nets. The status and trends of these salmonid species is discussed in creel survey reports (Peterson 2026a; Beckman 2026) and the Knife River trap report (Peterson 2026b).

## Methods

Lake Superior is divided into statistical zones and grids. In Minnesota, zones include MN-1, MN-2, and MN-3 (Figure 1). MN-1 encompasses the area from the Duluth Entry to the Encampment River; MN-2 extends from the Encampment River to the Popular River; MN-3 extends from the Poplar River to the Canadian border. These zones will regularly be referred to throughout this report.

The MN DNR conducts the May Lake Trout assessment in MN-1 while commercial operators provide data for MN-2 and MN-3. The May Lake Trout assessment utilizes 4.5-inch stretch-measure mesh. In MN-1 each gang consists of three 250-foot nets for a total of 750 feet per gang; commercial operators set gangs of variable length. Gangs were set in eight locations in MN-1, two in MN-2, and one in MN-3, with each gang set between 120 and 240 feet of water. Gangs set by the MN DNR were for one night unless weather interfered with net retrieval; participating commercial operators generally set gangs for one or two nights.

The juvenile Lake Trout assessment is conducted solely by the MN DNR. The assessment had consisted of five nets each 200 feet in length tied together for a total gang length of 1,000 feet. Mesh sizes included 1.5-, 1.75-, 2.0-, 2.25-, and 2.5-inch stretch-measure mesh. However, in 2022 the 1.75-inch and 2.25-inch meshes were dropped due to difficulty obtaining those mesh sizes, and because they were sizes not commonly used by other jurisdictions around the lake. Gangs were reconfigured as three nets each 300 feet in length for a total gang length of 900 feet, utilizing 1.5-, 2.0-, 2.5-inch stretch-measure mesh. Gangs were set in six locations in MN-1, four locations in MN-2, and three locations in MN-3, with each gang starting in 120 feet of water and ending shallower than 240 feet. Gang sets were for two nights, except for at Hovland, which is always set for one night.

A limited summer expanded commercial Lake Trout assessment fishery was permitted beginning in 2007 for MN-3, 2010 for MN-2, and 2017 for MN-1. The annual Lake Trout limits were 3,000 fish in MN-3, 2,000 fish in MN-2, and 500 fish in MN-1, but in 2023 the MN-1 quota was increased to 700 fish. Commercial operators selected the statistical zone and grid they wished to fish in, with no more than two operators per grid. Lake Trout were allotted based on the number of applicants per zone, with a maximum of 1,000 Lake Trout per operator. The season was open from June 1st through September 30th. Detailed harvest information for this fishery can be found in the annual commercial fishery summary report (Blankenheim 2026).

Statistical zones, grids, and locations for the May Lake Trout and juvenile Lake Trout assessments are shown in Figure 1. Detailed specifications for survey nets can be found in Ebener (2001). In all surveys the length, weight, sex, fin clips, and lamprey wounds were recorded for each fish caught. The MN DNR collected otoliths and stomach contents on all Lake Trout retained, while commercial operators did so on a subsample of the fish they harvested in the May Lake Trout and summer expanded commercial assessments.

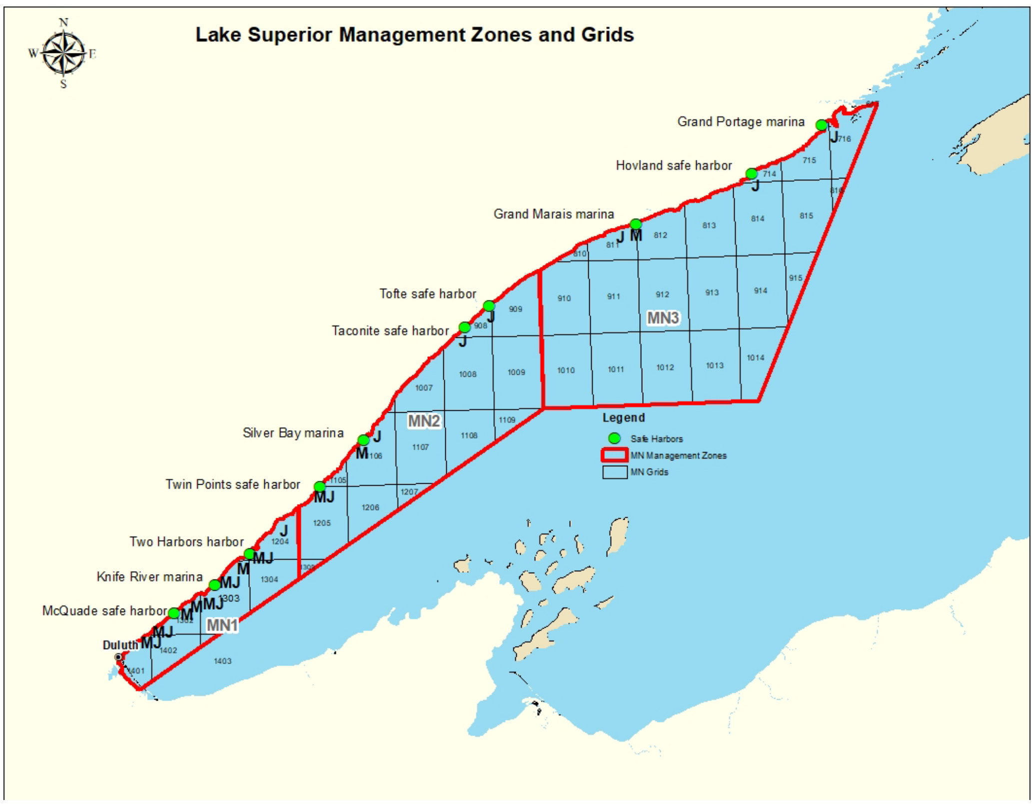


**Figure 1. Statistical zones, grids, and sampling stations for May (M) and juvenile (J) assessments, Minnesota waters of Lake Superior.**

Beginning in 2006, catch per unit effort (CPUE) for Lake Trout has been corrected for soak time (i.e., the numbers of nights the nets were fished). Correction factors for gill net CPUE developed by G.L. Curtis (Great Lakes Science Center, unpublished; cited in Hansen et al. 1998) were used to standardize 2- and ≥3-night sets to a uniform base of one night. Thus, the net length was multiplied by 1.52 for 2-night sets and 1.8 for ≥3-night sets.

Previously in MN-1, Lake Trout CPUE was calculated using an average of individual net CPUE's:

$$\overline{CPUE_i} = \frac{\sum \frac{C_i}{f_i}}{n},$$

where $C_i$ = individual net catch (number of Lake Trout), $f_i$ = fishing effort (1,000 feet of gill net), and $n$ = the number of net sets in a given year. The benefit of this equation is confidence limits can be calculated for the CPUE value, which we do not utilize in this report. For data clarity, consistency between statistical districts, and ease of understanding in reporting, the CPUE calculation was changed to:

$$CPUE = \frac{\sum C_i}{\sum f_i},$$

and all previous years' CPUEs were recalculated for MN-1. Therefore, historical CPUEs in this report may be slightly different than in some previous reports.

Cisco are assessed in two ways: netting assessments and hydroacoustic surveys. The MN DNR Cisco assessment consists of 300-foot multi-mesh (2.0-, 2.5-, and 3.0-inch stretch-measure mesh) nets, with 100 feet of each mesh size per net. Two nets are fished east of Two Harbors in Burlington Bay. One net is fished 12 feet below the surface while the other is fished 24 feet below the surface in approximately 150 feet of water. Nets are checked daily until a minimum of 100 Cisco total are collected. Length, weight, sex, and otoliths are collected from each fish. Additionally, length, sex, and otoliths are collected from commercial operators' Cisco samples in both spring/summer and fall from each statistical zone.

Hydroacoustic surveys with accompanying midwater trawling have been conducted since 2003; methodology can be found in Hrabik et al. (2006). From 2003-2014 hydroacoustic surveys were conducted in the summer but have been conducted in the fall since 2015. From 2017 to 2021, all hydroacoustic work was conducted aboard the University of Minnesota Duluth Large Lakes Observatory's R/V Blue Heron. In all other fall surveys, the offshore transects (>260 feet) were completed from the R/V Blue Heron and the nearshore transects (<260 feet) were completed aboard the MN DNR Blackfin. The advantage of utilizing the smaller MN DNR vessel for nearshore transects is that it can more thoroughly cover shallow water where the larger R/V Blue Heron cannot go. Sampling the MN-3 nearshore transect was discontinued after 2015 because it contributed very little to the overall Cisco biomass estimate. Prior to 2023, Biosonics hydroacoustic equipment was used for all surveys, but beginning in 2023 Simrad equipment was utilized. Data analysis procedures are described in the MN DNR Lake Superior Hydroacoustic Standard Operating Procedure.

## Results and Discussion

## May Assessment

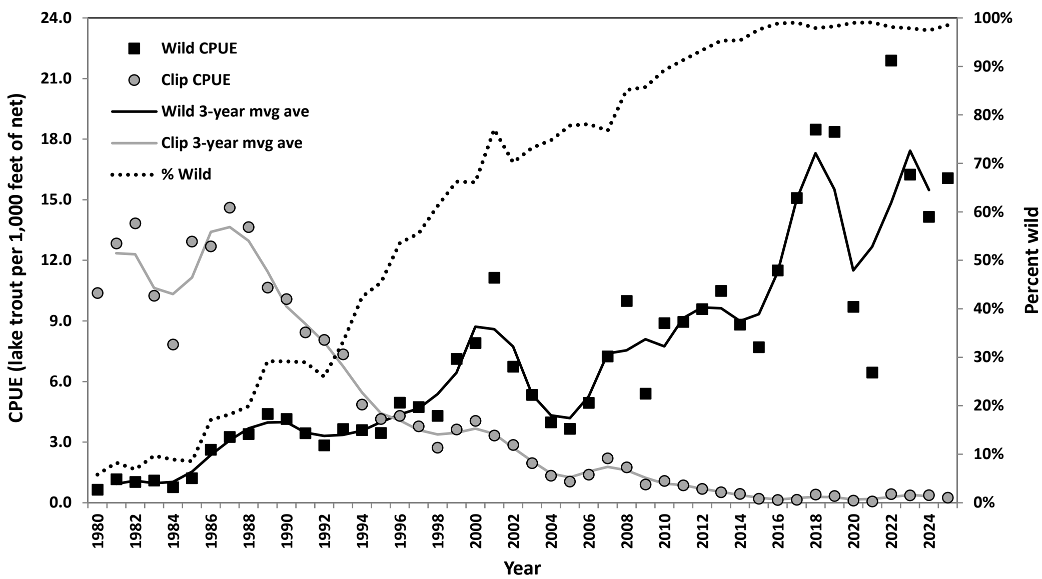


**Figure 2. Catch rate (number of fish per 1,000 feet of net) and three-year moving averages of wild and stocked Lake Trout, and percentage wild Lake Trout in the May assessment, 1980-2025.**

The overall CPUE of Lake Trout was 16.3 fish per 1,000 feet of net in the May assessment (Table 1). The CPUE was above the third quartile (interquartile range: 8.8-14.5 fish per 1,000 feet) for the 46-year time series. The wild Lake Trout CPUE was 16.1 fish per 1,000 feet of net while the stocked Lake Trout CPUE was 0.2 fish per 1,000 feet of net (Table 1, Figure 2). The long-term trend shows gradually increasing wild Lake Trout abundance through time. Wild fish comprised 99% of all Lake Trout sampled in the assessment. Stocked fish are uncommon in MN-2 and MN-3, but a few are still caught in MN-1 because stocking was discontinued in Minnesota waters only relatively recently (2016) and Wisconsin stocks Lake Trout annually.

By zone, Lake Trout CPUEs for MN-1, MN-2, and MN-3 were 18.4, 10.1, and 18.6 fish per 1,000 feet of net (Table 2, Figure 3). The CPUEs for each zone were within their interquartile ranges (MN-1: 11.2-21.1; MN-2: 5.8-10.8; MN-3: 11.9-20.3).

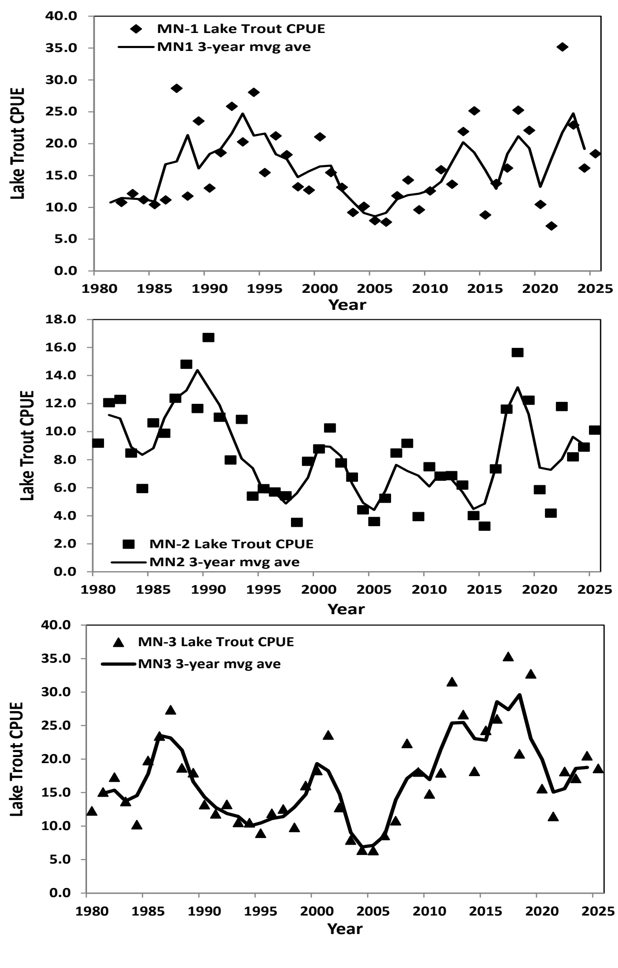


**Figure 3. Lake Trout catch rate (number of fish per 1,000 feet of net) and three-year moving averages by statistical district in the May assessment, 1980-2025.**

The average size of Lake Trout captured in the May assessment was 22.8 inches and 4.2 pounds, with fish ranging from 15 to 37 inches (Figure 4). Sixty-eight percent of the catch was between 20 and 25 inches. The length-frequency distribution of Lake Trout in the May assessment is not entirely representative of the population's length-frequency distribution, because the assessment utilizes only 4.5-inch stretch-measure mesh and therefore will not catch small or large specimens effectively. Similarly, the age structure of the Lake Trout catch is skewed towards age-5 to age-10 specimens for the same reason.

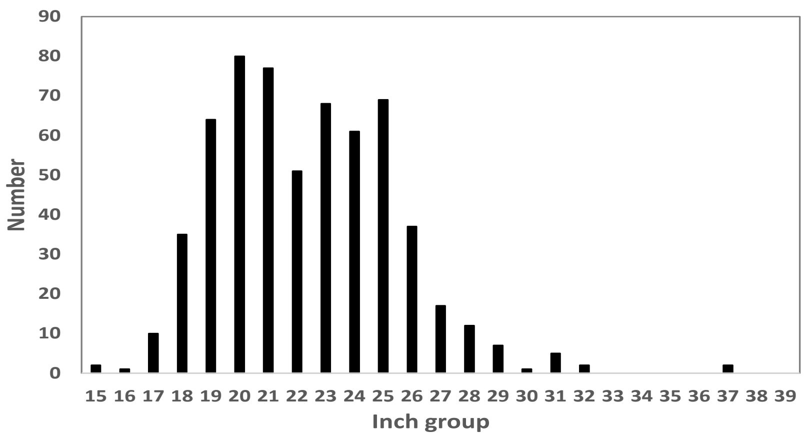


**Figure 4. The length-frequency distribution of Lake Trout caught in the May assessment, 2025.**

Sea Lamprey control is the responsibility of the Great Lakes Fishery Commission and conducted by the U.S. Fish & Wildlife Service and Fisheries and Oceans Canada. Control efforts have kept the population of Sea Lamprey at or below 10% of peak abundance. Nevertheless, Sea Lamprey are still a major cause of Lake Trout mortality in Minnesota waters. The number of fresh Sea Lamprey wounds per 100 Lake Trout (hereafter referred to as the wounding rate) in the May assessment was 9.0 for all management zones combined and shows an increasing trend in wounding abundance (Table 3, Figure 5). By management zone, wounding rates were 14.7 in MN-1, 5.1 in MN-2, and 6.0 in MN-3 (Table 3, Figure 6).

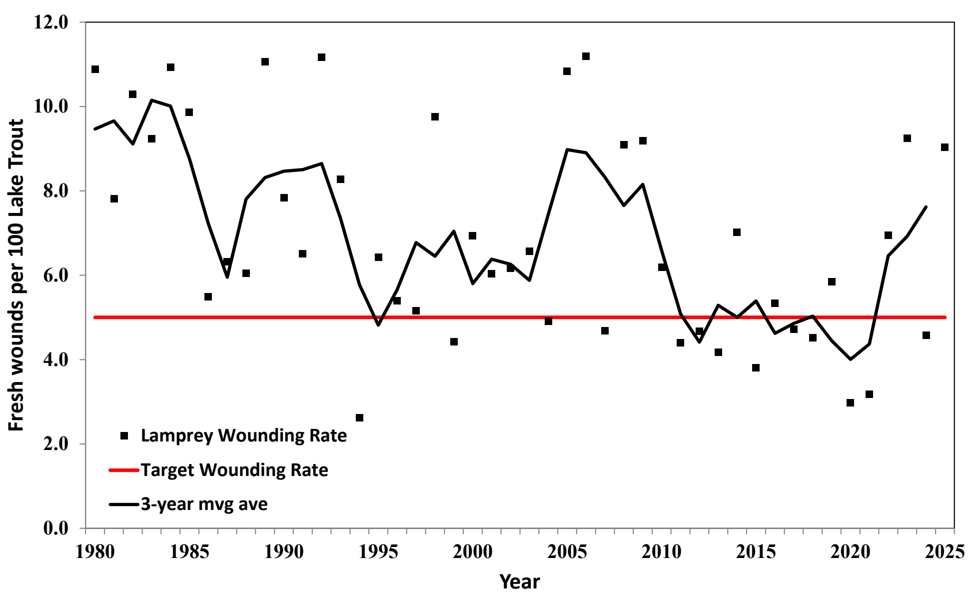


**Figure 5. The shorewide number of fresh Sea Lamprey wounds per 100 Lake Trout, target wounding rate, and 3-year moving average in the May assessment, 1980-2025.**

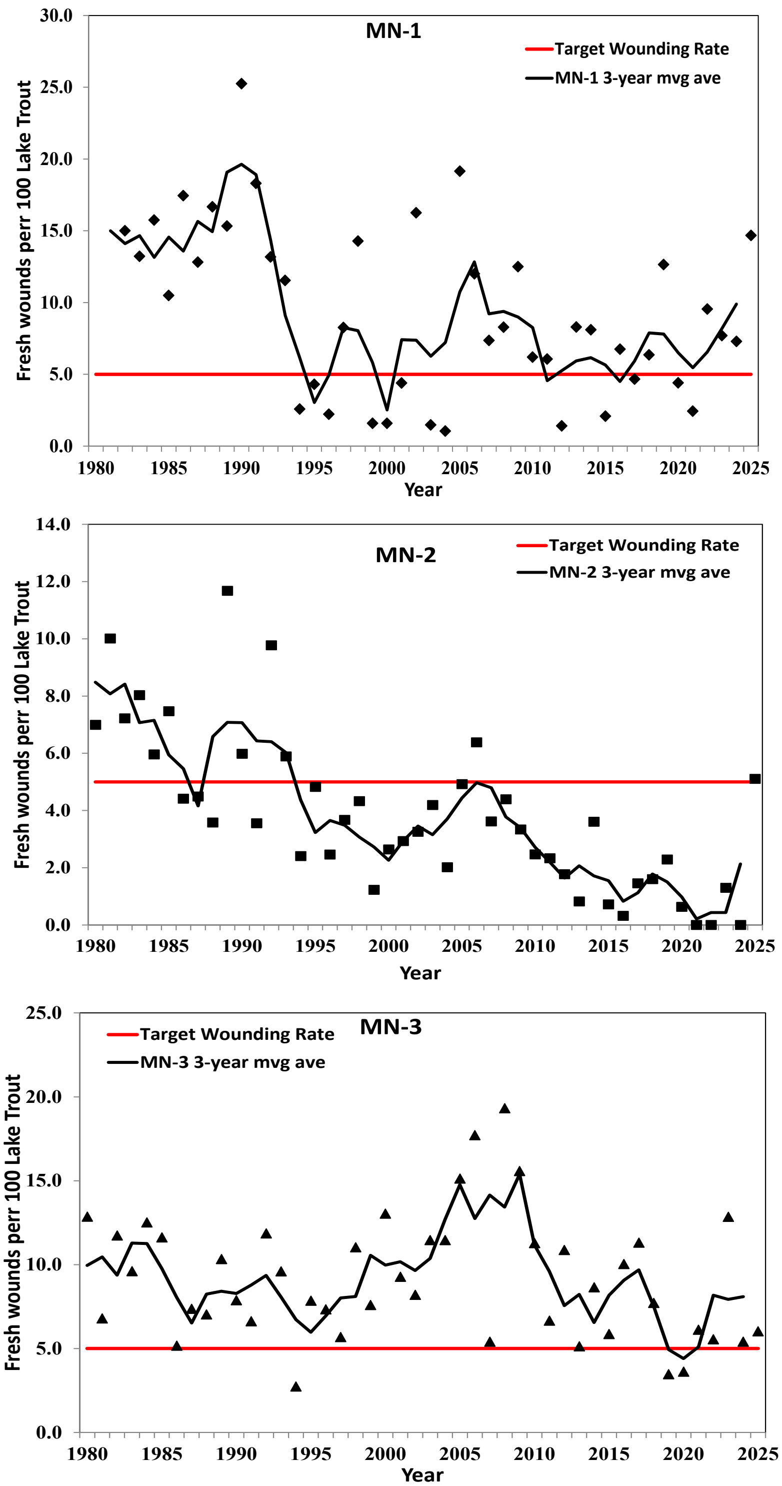


**Figure 6. Number of fresh Sea Lamprey wounds per 100 Lake Trout by statistical district in the May assessment and 3-year moving average, 1980 -2025.**

The target wounding rate for all zones is not more than 5.0 fresh wounds per 100 Lake Trout. Unfortunately, the overall wounding rate was nearly twice the target level, driven by increases across all management zones and especially MN-1. The wounding rates in both MN-1 and MN-2 were the highest observed in their respective management units in the past 20 years, although the rate in MN-2 is typically low and was barely over the target in 2025. Continued Sea Lamprey control is essential to maintain viable fisheries in the Great Lakes. Disruption of the program due to Covid resulted in increased Sea Lamprey numbers across the Great Lakes basin (Marcy-Quay et al. 2025).

There were 15 different categories of prey consumed by Lake Trout captured in the May assessment (Table 4). Lake Trout diets were comprised almost entirely of Rainbow Smelt (*Osmerus mordax*; 83.8%), unidentifiable fish remains (10.0%), and coregonids (Cisco, Kiyi (*Coregonus Kiyi*), and coregonids not identifiable to species; 4.6%).

The abundance of forage from the huge 2022 year-class of coregonids as well as a substantial year-class of smelt from the same year appears to have positively influenced the growth of Lake Trout. Since coregonids from the 2022 year-class became available as age-1 and older prey for Lake Trout, there has been a noticeable increase in the mean length-at-age of Lake Trout caught in the May assessment. The average length of Lake Trout age-7 and older from 2023-2025 has been 0.5 to 2.0 inches larger than for fish of the same age-classes from 2020-2022 (Figure 7).

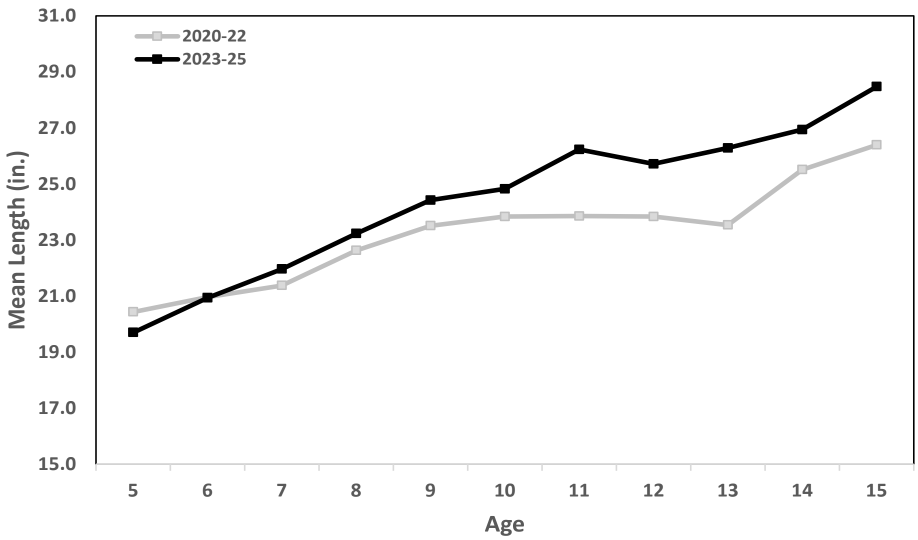


**Figure 7. The mean length-at-age of Lake Trout caught in the May Lake Trout assessment from 2020-2022 and 2023-2025.**

## Juvenile Lake Trout Assessment

The overall CPUE of juvenile Lake Trout (less than 17 inches) was 8.1 fish per 1,000 feet of net, which was below the 46-year interquartile range (14.4-25.1 fish per 1,000 feet of net) and the second worst total CPUE during this time period (Table 5). The CPUE of wild juveniles was 8.1 Lake Trout per 1,000 feet of net and the CPUE of stocked juveniles was 0.0 fish/1,000 feet of net. (Table 5, Figure 8). This was the first year that no stocked juvenile Lake Trout were captured, which is surprising given that Wisconsin still stocks Lake Trout annually.

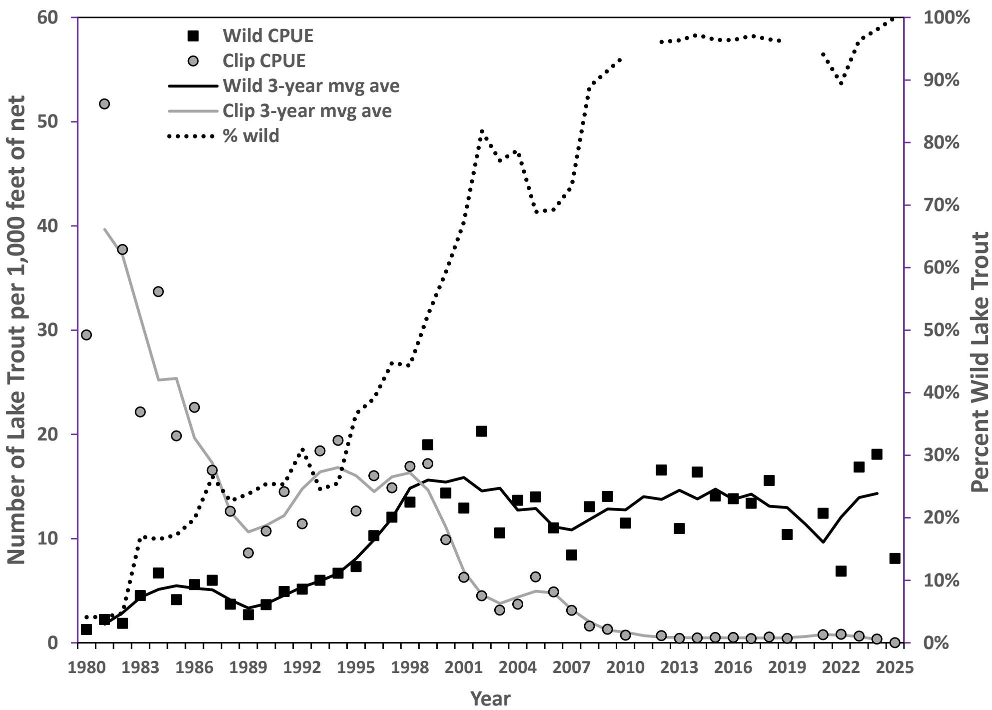


**Figure 8. Catch rate (number of fish per 1,000 feet of net) of wild and stocked Lake Trout, three-year moving averages, and percent wild Lake Trout in the juvenile (<17”) Lake Trout assessment, 1980-2025.**

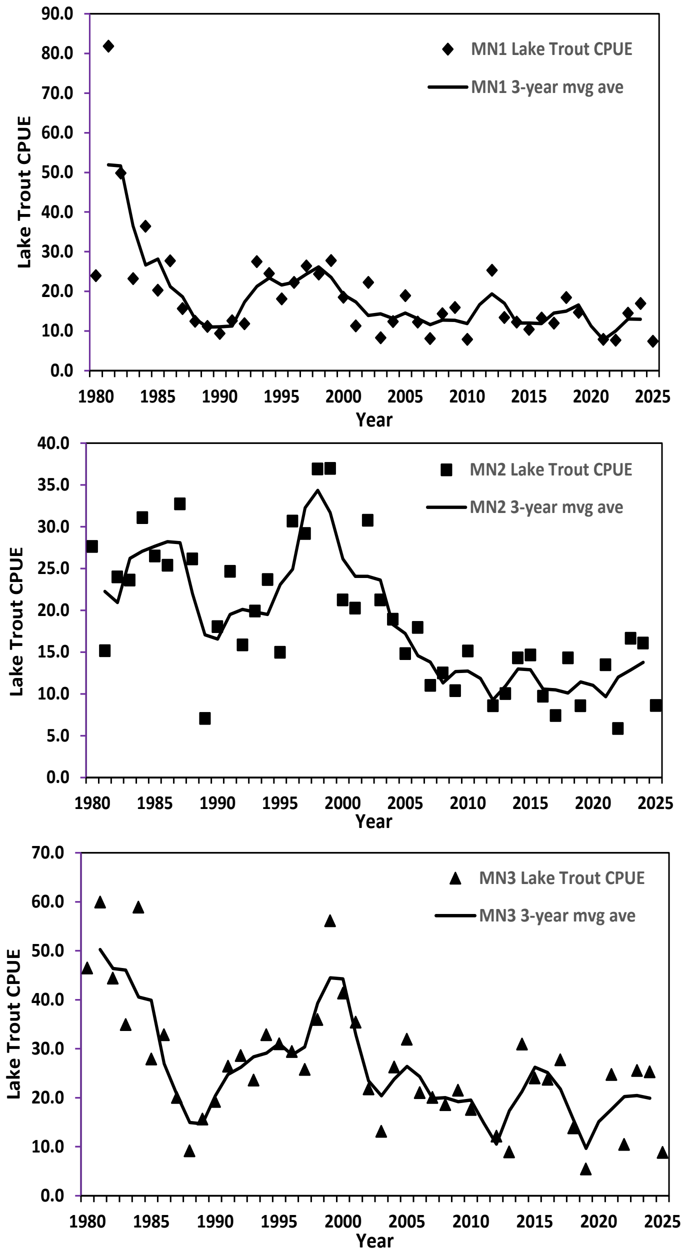


**Figure 9. Lake Trout catch rate (number of fish per 1,000 feet of net) and 3-year moving averages by statistical district in the juvenile Lake Trout assessment, 1980-2025.**

CPUEs in MN-1, MN-2, and MN-3 were 7.4, 8.6, and 8.8 Lake Trout per 1,000 feet of net, respectively (Table 6, Figure 9). The CPUEs for all three zones were below their respective interquartile ranges (MN-1: 12.0-23.4; MN-2: 13.2-24.8; MN-3: 19.1-32.2). The MN-1 CPUE was the lowest of the 46-year time series. Although the overall juvenile CPUE has been much lower than that observed in the 1980s, it is important to consider Lake Trout rehabilitation was still underway and influenced by heavy stocking at that time, and recent CPUEs likely represent recruitment levels of self-sustaining Lake Trout populations in Lake Superior. Despite the poor numbers observed in 2025, Lake Trout recruitment appears to be relatively stable.

The juvenile Lake Trout assessment is designed to provide a measure of recruitment and uses appropriately small mesh sizes to achieve this objective. Most Lake Trout caught in the assessment were less than 17 inches (Figure 10). Fish over 17 inches that were still alive were released.

There were 10 categories of diet items consumed by juvenile Lake Trout (Table 4). Unidentifiable fish remains (33.7%), *Mysis* (26.4%), Rainbow Smelt (26.0%), sculpin species (7.1%), and coregonids (3.7%) were the most common diet items. The amount of coregonid biomass decreased compared to 2024, likely because the year-class of coregonids they had been eating have become too large for small lake trout to consume.

Although the intended purpose of the survey is to assess Lake Trout recruitment, a variety of other species are caught in the assessment. Similar to 2024, a significant number of young Cisco were caught in 2025. While not the target species of the survey, Cisco are typically captured in low numbers. For example, in 2022 the CPUE of Cisco in the juvenile Lake Trout assessment was 4.3 fish per 1,000 feet of net. In 2025, the Cisco CPUE was 19.8 fish per 1,000 feet of net. A large portion of the 232 Cisco captured in the survey were fish between 7 and 11 inches that were age-3 and from the exceptional 2022 year-class.

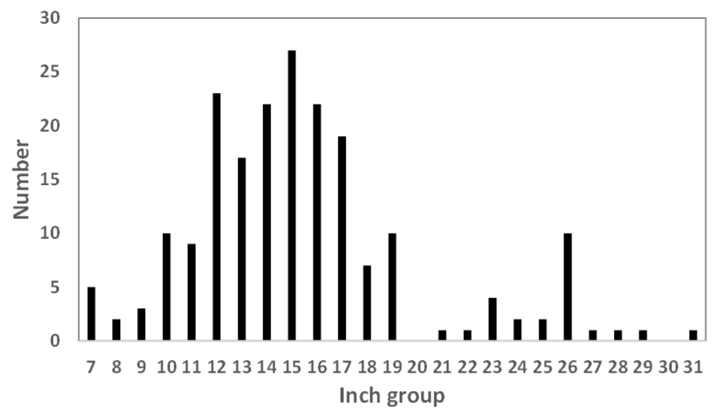


**Figure 10. The length-frequency distribution of Lake Trout in the juvenile Lake Trout assessment, 2025.**

**Summer Expanded Commercial Assessment**

In 2025, a total of 282 Lake Trout were harvested in MN-1, and the CPUE was 18.2 Lake Trout per 1,000 feet of net (Table 7, Figure 11). Commercial operators harvested 40% of the 700 fish total-allowable-catch (TAC; Lake Trout and Siscowet combined). The Lake Trout harvest was the lowest since commercial harvest in MN-1 began in 2017, but it was due to lack of effort, not poor fishing, as the CPUE was similar to previous years while effort was only about half of what is typically put forth in this zone. Commercial harvest of Lake Trout represented 1% of the estimated total Lake Trout harvest in MN-1 between sport (25,985) and commercial (282) fishers combined.

In MN-2, the number of Lake Trout harvested by commercial operators was 1,101 and the CPUE was 13.7 Lake Trout per 1,000 feet of net (Table 7, Figure 11). Forty-eight Siscowet were also harvested. Commercial operators harvested 57% of the 2,000 fish TAC for MN-2. Harvest was the highest since 2018 and due to both more fishing effort and a better-than-average CPUE. Commercial harvest of Lake Trout represented 16% of the estimated total Lake Trout harvest in MN-2 between sport (5,692) and commercial (1,101) fishers combined.

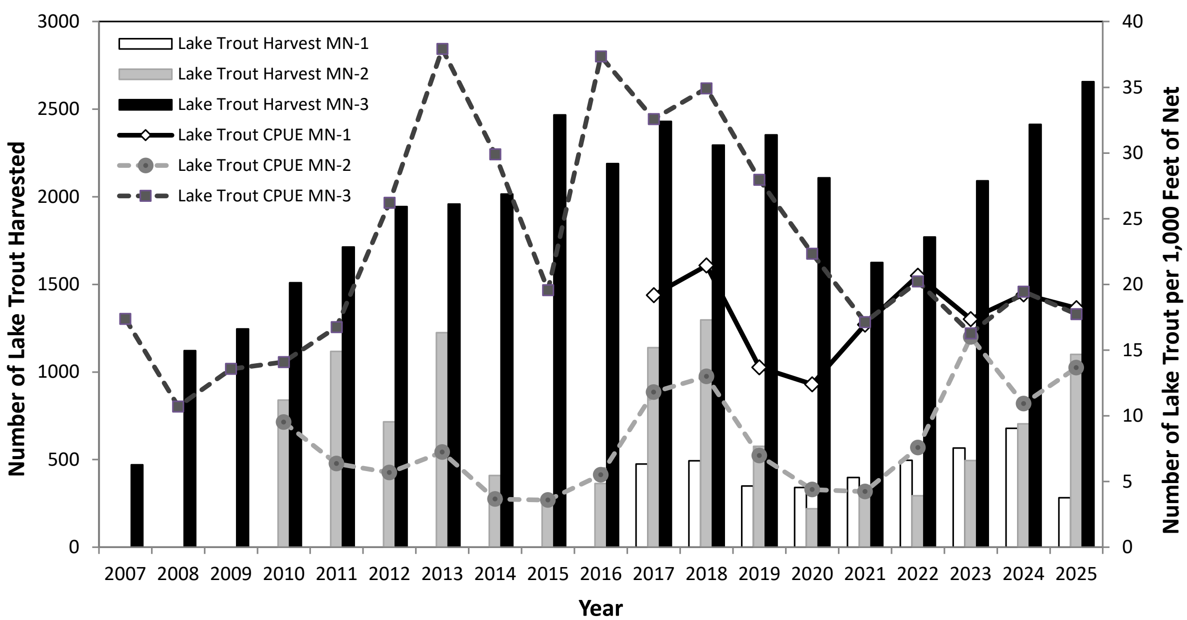


**Figure 11. Lake Trout harvest and catch rate (number of fish per 1,000 feet of net) in the summer expanded commercial assessment, 2007-2025.**

In MN-3, commercial operators harvested 2,657 Lake Trout and the CPUE was 17.7 Lake Trout per 1,000 feet of net (Table 7, Figure 11). An additional 75 Siscowet were harvested. Commercial operators harvested 91% of the 3,000 fish TAC. The harvest in MN-3 was the highest since the commercial expanded assessment began in 2007, which was due to a substantial increase in effort. Commercial harvest of Lake Trout represented 41% of the estimated total Lake Trout harvest in MN-3 between sport (3,824) and commercial (2,657) fishers combined. In the three zones combined, commercial operators harvested 73% of the TAC. Overall, commercial harvest accounted for 10% of the total estimated Lake Trout harvest between sport (35,501) and commercial (4,040) fishers.

Commercial operators are allowed to use only 4.5-inch stretch-measure mesh in the summer expanded commercial assessment, which is the same size used in the May Lake Trout assessment. Thus, the length-frequency distribution is typically similar between these assessments. The peak of the length-frequency distribution in the summer expanded commercial assessment was 24 inches (Figure 12). The average size of Lake Trout harvested was 23.6 inches and 4.4 pounds.

Twenty-three categories of diet items were consumed by Lake Trout in the summer expanded commercial assessment. Lake Trout diet composition by weight was predominately coregonid species (Cisco, Kiyi, and coregonids unidentifiable to species; 42.1%), Rainbow Smelt (23.9%), unidentifiable fish remains (23.2%), Burbot (*Lota lota*; 3.3%), and sculpin species (2.5%) (Table 4). In some years, terrestrial insects and Mysis contribute to the diet of Lake Trout. That was only minimally the case in 2025, likely due to the prevalence of primary forage species.

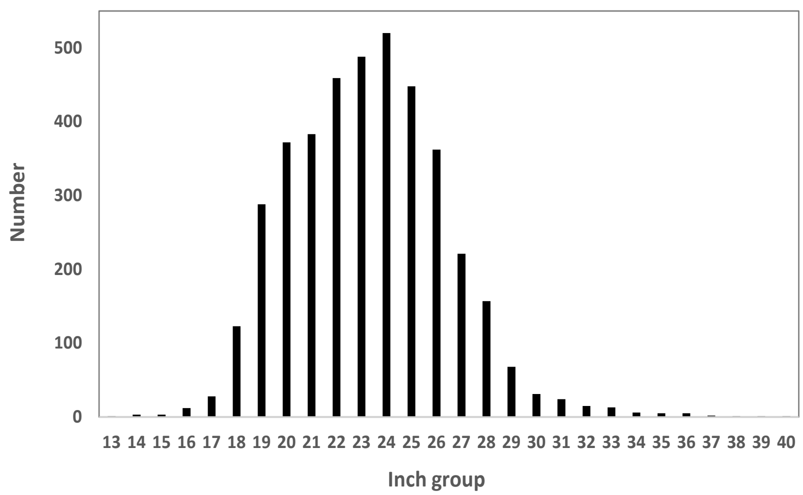


**Figure 12. The length-frequency distribution of Lake Trout caught in the summer expanded commercial assessment, 2025**.

## Cisco Assessment

The estimated biomass of spawning-size Cisco in the 2025 hydroacoustic survey was 8.66 million pounds (Table 8, Figure 13). While the nearshore zone (<260 feet) often has higher densities of adult Cisco, the majority of the adult Cisco biomass is typically in the offshore zone (>260 feet) because it is a much larger volume. By zone, MN-3 offshore accounted for 60% of the total Cisco biomass, followed by MN-2 offshore (29%), MN-1 offshore (5%), MN-1 nearshore (5%), and MN-2 nearshore (1%). The 2025 estimate represents a 27% decrease in biomass from 2024.

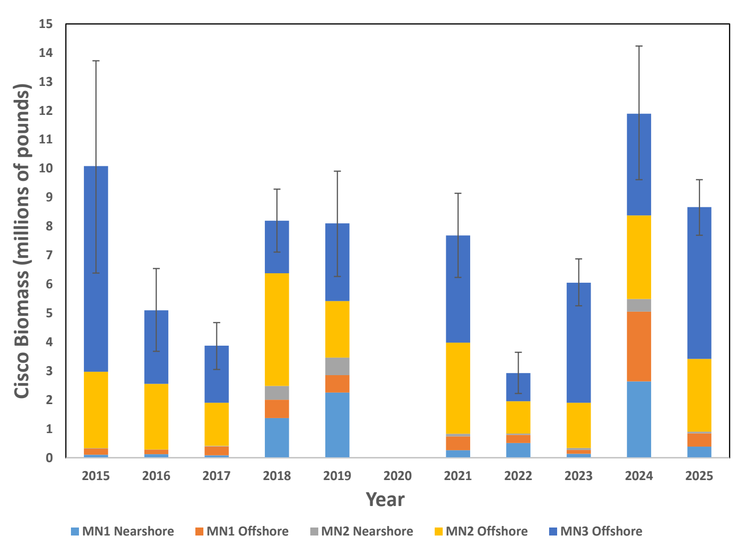


**Figure 13. The estimated biomass of spawning-size Cisco from fall hydroacoustic surveys, 2015-2025. Upper and lower 95% confidence intervals are shown.**

The decrease in biomass is somewhat surprising, since there was a modest 2020 year-class of Cisco (10 age-1 Cisco/ha) observed in the 2021 USGS trawl survey (Vinson 2024). That year-class is fully recruited to commercial gear and is providing a portion, albeit small, of the commercial catch based on aging structures taken from commercially caught Cisco (Figure 14). Additionally, the fastest

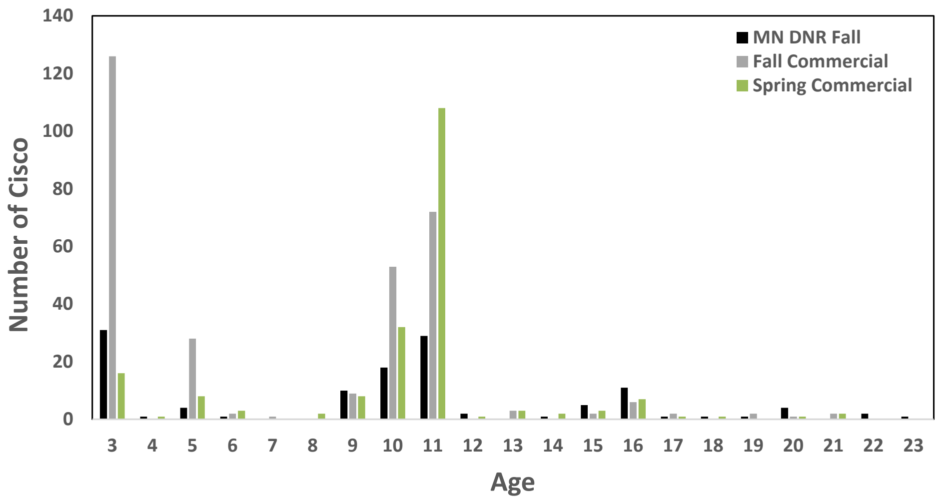


**Figure 14. The age distribution of Cisco caught in the fall MN DNR Cisco survey, fall commercial fishery, and spring commercial fishery, 2025.**

growing fish from the record 2022 year-class were also large enough to be caught by commercial gear. Cisco samples from the spring showed that the 2014 and 2015 year-classes were the primary year-classes supporting the fishery, comprising 70% of the catch, with smaller contributions from several other year-classes, including 2022 (8%). But by fall, the fast growing fish from the 2022 year-class recruited to commercial gear and those fish comprised 40% of the catch, followed by the 2014 (23%) and 2015 (17%) year-classes. The fall MN DNR Cisco survey showed similar age trends, with the 2022 year-class accounting for 25% of the catch, followed by the 2014 (24%) and 2015 (15%) year-classes being most prevalent in the survey. It is difficult to ascertain if the decrease in biomass was truly because of potentially diminishing older year-classes, if perhaps the 2024 estimate was biased high because of the unusually high biomass of Cisco in the nearshore waters, or simply due to variability in year-to-year sampling.

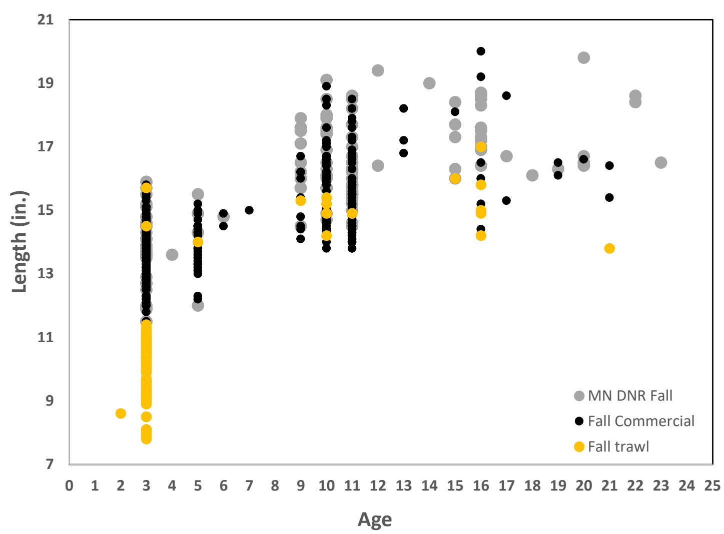


**Figure 15. The length-at-age distribution of Cisco sampled in the fall gillnet survey, fall midwater trawl, and fall commercial sampling, 2025.**

The 2022 year-class of Cisco showed remarkable variability in growth between fish of the same age. Age-3 fish in the fall gillnets were 11.5 to 15.9 inches long (Figure 15). However, selectivity bias can occur with gillnets; gear may not sample certain sizes of fish because of the mesh sizes used. Combining Cisco from midwater trawls (conducted during hydroacoustic assessments) to the gillnet data produces a more complete picture of Cisco length-at-age. There was even greater variability in length at age-3, with fish ranging from 7.8 to 15.9 inches. The 2022 year-class should fully recruit to the commercial fishery in the next one to two years, providing both managers and commercial operators insight into how significantly a major recruitment event affects overall biomass and commercial catches.

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Segment 37, Year 1
Objective 2
03/09/2026

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

# COMPLETION REPORT FOR MINNESOTA WATERS OF LAKE SUPERIOR

# 2025

Prepared by:

Josh Blankenheim

Approved by: Cory Goldsworthy Digitally signed by Cory Goldsworthy Date: 2026.04.09 14:57:13 -05'00'
Area Fisheries Supervisor Date

Approved by: David Weitzel Digitally signed by David Weitzel Date: 2026.04.09 15:00:49 -05'00'
Regional Fisheries Approval Date

Reimbursed under Federal Aid by the Sport Fish Restoration Act

**Table 1. Historical catch summary of Lake Trout caught in the May Lake Trout assessment, CPUE (number of fish per 1,000 feet) and percent wild Lake Trout, 1980-2025.**

| Year | Number of Fish Sampled | Number of Wild Fish Per 1,000 Feet | Number of Stocked Fish Per 1,000 Feet | Total Number Per 1,000 Feet | Percent Wild |
|---|---|---|---|---|---|
| 1980 | 2,436 | 0.6 | 10.4 | 11.0 | 6% |
| 1981 | 3,080 | 1.2 | 12.8 | 14.0 | 8% |
| 1982 | 3,017 | 1.0 | 13.8 | 14.8 | 7% |
| 1983 | 2,930 | 1.1 | 10.2 | 11.3 | 10% |
| 1984 | 2,580 | 0.8 | 7.8 | 8.6 | 9% |
| 1985 | 2,698 | 1.2 | 12.9 | 14.1 | 9% |
| 1986 | 3,117 | 2.6 | 12.7 | 15.3 | 17% |
| 1987 | 2,882 | 3.3 | 14.6 | 17.9 | 18% |
| 1988 | 2,846 | 3.4 | 13.6 | 17.0 | 20% |
| 1989 | 3,201 | 4.4 | 10.6 | 15.0 | 29% |
| 1990 | 2,860 | 4.1 | 10.1 | 14.2 | 29% |
| 1991 | 2,402 | 3.4 | 8.4 | 11.9 | 29% |
| 1992 | 2,197 | 2.8 | 8.1 | 10.9 | 26% |
| 1993 | 2,197 | 3.6 | 7.3 | 11.0 | 33% |
| 1994 | 1,847 | 3.6 | 4.9 | 8.4 | 43% |
| 1995 | 1,612 | 3.4 | 4.1 | 7.6 | 45% |
| 1996 | 1,490 | 4.9 | 4.3 | 9.2 | 54% |
| 1997 | 1,157 | 4.7 | 3.8 | 8.5 | 56% |
| 1998 | 887 | 4.3 | 2.7 | 7.0 | 61% |
| 1999 | 1,306 | 7.1 | 3.6 | 10.7 | 66% |
| 2000 | 1,542 | 7.9 | 4.1 | 11.9 | 66% |
| 2001 | 1,291 | 11.1 | 3.3 | 14.5 | 77% |
| 2002 | 1,255 | 6.7 | 2.9 | 9.6 | 70% |
| 2003 | 896 | 5.3 | 2.0 | 7.3 | 73% |
| 2004 | 809 | 4.0 | 1.3 | 5.3 | 75% |
| 2005 | 666 | 3.6 | 1.0 | 4.7 | 78% |
| 2006 | 958 | 4.9 | 1.4 | 6.3 | 78% |
| 2007 | 1,023 | 7.2 | 2.2 | 9.4 | 77% |
| 2008 | 988 | 10.0 | 1.7 | 11.7 | 85% |
| 2009 | 708 | 5.4 | 0.9 | 6.3 | 86% |
| 2010 | 788 | 8.9 | 1.1 | 10.0 | 89% |
| 2011 | 873 | 9.0 | 0.9 | 9.8 | 91% |
| 2012 | 886 | 9.6 | 0.7 | 10.3 | 93% |
| 2013 | 895 | 10.5 | 0.5 | 11.0 | 95% |
| 2014 | 794 | 8.8 | 0.4 | 9.2 | 95% |
| 2015 | 541 | 7.7 | 0.2 | 7.9 | 98% |
| 2016 | 782 | 11.5 | 0.1 | 11.6 | 99% |
| 2017 | 1,033 | 15.1 | 0.1 | 15.2 | 99% |
| 2018 | 1,089 | 18.5 | 0.4 | 18.9 | 98% |
| 2019 | 865 | 18.4 | 0.3 | 18.7 | 98% |
| 2020 [1] | 581 | 9.7 | 0.1 | 9.8 | 99% |
| 2021 | 541 | 6.4 | 0.1 | 6.5 | 99% |
| 2022 | 799 | 21.9 | 0.4 | 22.3 | 98% |
| 2023 | 650 | 16.2 | 0.4 | 16.6 | 98% |
| 2024 | 658 | 14.1 | 0.4 | 14.5 | 97% |
| 2025 | 601 | 16.1 | 0.2 | 16.3 | 99% |

[1] entire survey was conducted by commercial operators due to Covid restrictions on MNDNR field work

**Table 2. Corrected Lake Trout catch and yield by station in the May Lake Trout assessment, 2025.**

| Location | Effort in Feet (corrected effort) | Number Caught | Total Pounds | Number per 1,000 feet | Pounds per 1,000 feet | Percent Wild |
|---|---|---|---|---|---|---|
| MN-1 | | | | | | |
| All stations (n = 8) | 12,000 (12,000) | 221 | 1,010 | 18.4 | 84.2 | 96 |
| MN-2 | | | | | | |
| Split Rock | 500 (900) | 26 | 102 | 28.9 | 113.0 | 100 |
| Silver Bay | 7,500 (8,800) | 72 | 284 | 8.2 | 32.3 | 100 |
| Totals MN-2 | 8,000 (9,700) | 98 | 386 | 10.1 | 39.8 | 100 |
| MN-3 | | | | | | |
| Grand Marais | 11,250 (15,150) | 282 | 1,134 | 18.6 | 74.8 | 100 |
| **All locations** | | | | | | |
| **Shorewide** | **31,250 (36,850)** | **601** | **2,530** | **16.3** | **68.6** | **99** |

**Table 3. Number of fresh lamprey wounds per 100 Lake Trout (>17 inches) in the May Lake Trout assessment, by size class and statistical district, 2025. Number of Lake Trout sampled in each length category is listed in parenthesis.**

| | Size Class | | | | |
|---|---|---|---|---|---|
| | 432-532 mm (17-20.9 in.) | 533-634 mm (21-24.9 in.) | 635-736 mm (25-28.9 in.) | 737 + mm (29 + in.) | Total |
| MN-1 | 1.6 (62) | 20.5 (88) | 18.3 (60) | 25.0 (8) | 14.7 (218) |
| MN-2 | 0.0 (38) | 8.6 (35) | 8.7 (23) | 0.0 (2) | 5.1 (98) |
| MN-3 | 0.0 (89) | 5.2 (134) | 19.2 (52) | 0.0 (7) | 6.0 (282) |
| **TOTALS** | 0.5 (189) | 10.9 (257) | 17.0 (135) | 11.8 (17) | 9.0 (598) |

**Table 4. Diet composition by weight of prey items in Lake Trout stomachs in the May, juvenile, and summer expanded commercial assessments, 2025. The number of stomachs sampled with prey items is shown in parentheses.**

| Diet item | May | | Juvenile | | Summer | |
|---|---|---|---|---|---|---|
| Alewife | 0.0% | (1) | | | 0.3% | (4) |
| Aquatic insects | 0.0% | (1) | 1.4% | (10) | 0.3% | (39) |
| Artificial fishing bait | | | | | 0.1% | (1) |
| Bird | | | | | 0.1% | (3) |
| Burbot | 1.3% | (2) | 0.6% | (1) | 3.3% | (4) |
| Clam spp | | | | | | |
| Cisco | 2.6% | (3) | | | 7.1% | (8) |
| Coregonid spp | 1.6% | (7) | 3.7% | (1) | 32.8% | (96) |
| Deepwater Sculpin | | | 0.9% | (1) | 0.4% | (9) |
| Detritus | | | | | | |
| Eggs | | | | | | |
| Empty | | (25) | | (34) | | (401) |
| Garbage | | | | | | |
| Kiyi | 0.4% | (2) | | | 2.2% | (6) |
| Lake Trout | | | | | 0.6% | (1) |
| *Mysis* | | | 26.4% | (39) | 1.1% | (26) |
| Ninespine Stickleback | | | | | | |
| Pink Salmon | | | | | 0.1% | (1) |
| Rainbow Trout | | | | | | |
| Rainbow Smelt | 83.8% | (241) | 26.0% | (17) | 23.9% | (140) |
| Rock | 0.1% | (7) | | | 0.7% | (35) |
| Rodent | 0.0% | (1) | | | | |
| Sculpin spp | 0.1% | (6) | 6.2% | (11) | 1.7% | (32) |
| Slimy Sculpin | | | | | 0.3% | (6) |
| Spoonhead Sculpin | | | | | 0.1% | (1) |
| Stickleback spp | 0.0% | (1) | | | 0.0% | (6) |
| Terrestrial insects | 0.0% | (3) | 1.1% | (6) | 1.3% | (42) |
| Threespine Stickleback | 0.0% | (1) | | | 0.0% | (1) |
| Trash | | | | | 0.0% | (2) |
| Unidentifiable fish remains | 10.0% | (152) | 33.7% | (50) | 23.2% | (335) |
| Woody debris | 0.1% | (15) | 0.1% | (3) | 0.4% | (37) |

**Table 5. Historical catch summary of Lake Trout less than 17 inches caught in small mesh gill nets (1.5-2.5 inch stretch-measure), CPUE (number of fish per 1,000 feet) and percent wild in the juvenile Lake Trout assessment, 1980-2025.**

| Year | Number of Fish Sampled | Number of Wild Fish Per 1,000 Feet | Number of Stocked Fish Per 1,000 Feet | Total Number Per 1,000 Feet | Percent Wild |
|---|---|---|---|---|---|
| 1980 | 585 | 1.3 | 29.5 | 30.8 | 4% |
| 1981 | 914 | 2.2 | 51.7 | 54.0 | 4% |
| 1982 | 551 | 1.9 | 37.7 | 39.6 | 5% |
| 1983 | 453 | 4.5 | 22.1 | 26.7 | 17% |
| 1984 | 585 | 6.7 | 33.7 | 40.4 | 17% |
| 1985 | 336 | 4.1 | 19.9 | 24.0 | 17% |
| 1986 | 404 | 5.6 | 22.6 | 28.2 | 20% |
| 1987 | 346 | 6.0 | 16.5 | 22.5 | 27% |
| 1988 | 269 | 3.7 | 12.6 | 16.3 | 23% |
| 1989 | 168 | 2.7 | 8.6 | 11.3 | 24% |
| 1990 | 236 | 3.7 | 10.7 | 14.4 | 25% |
| 1991 | 363 | 4.9 | 14.5 | 19.4 | 25% |
| 1992 | 274 | 5.1 | 11.4 | 16.6 | 31% |
| 1993 | 387 | 6.0 | 18.4 | 24.4 | 25% |
| 1994 | 458 | 6.7 | 19.4 | 26.1 | 26% |
| 1995 | 352 | 7.3 | 12.6 | 20.0 | 37% |
| 1996 | 468 | 10.3 | 16.0 | 26.3 | 39% |
| 1997 | 440 | 12.1 | 14.9 | 26.9 | 45% |
| 1998 | 557 | 13.5 | 16.9 | 30.4 | 44% |
| 1999 | 640 | 19.0 | 17.2 | 36.2 | 53% |
| 2000 | 454 | 14.4 | 9.9 | 24.3 | 59% |
| 2001 | 370 | 12.9 | 6.3 | 19.2 | 67% |
| 2002 | 484 | 20.3 | 4.5 | 24.8 | 82% |
| 2003 | 249 | 10.5 | 3.1 | 13.7 | 77% |
| 2004 | 334 | 13.7 | 3.7 | 17.4 | 79% |
| 2005 | 402 | 14.0 | 6.3 | 20.3 | 69% |
| 2006 | 306 | 11.0 | 4.9 | 15.9 | 69% |
| 2007 | 222 | 8.4 | 3.1 | 11.5 | 73% |
| 2008 | 282 | 13.0 | 1.6 | 14.7 | 89% |
| 2009 | 295 | 14.0 | 1.3 | 15.3 | 92% |
| 2010 | 235 | 11.5 | 0.7 | 12.2 | 94% |
| 2011 [1] | - | | | | |
| 2012 | 332 | 16.6 | 0.7 | 17.3 | 96% |
| 2013 | 219 | 11.0 | 0.4 | 11.4 | 96% |
| 2014 | 324 | 16.4 | 0.5 | 16.8 | 97% |
| 2015 | 281 | 14.1 | 0.5 | 14.6 | 96% |
| 2016 | 276 | 13.8 | 0.5 | 14.3 | 96% |
| 2017 | 273 | 13.4 | 0.4 | 13.8 | 97% |
| 2018 | 315 | 15.6 | 0.6 | 16.1 | 97% |
| 2019 | 208 | 10.4 | 0.4 | 10.8 | 96% |
| 2020 [2] | - | | | | |
| 2021 | 254 | 12.4 | 0.8 | 13.2 | 94% |
| 2022 | 133 | 6.9 | 0.8 | 7.7 | 89% |
| 2023 | 303 | 16.9 | 0.6 | 17.5 | 96% |
| 2024 | 319 | 18.1 | 0.3 | 18.4 | 98% |
| 2025 | 140 | 8.1 | 0.0 | 8.1 | 100% |

[1] No data due to State of Minnesota government shutdown

[2] No data due to coronavirus pandemic

**Table 6. Summary of fishing effort, catch, percentage of wild Lake Trout and CPUE (number of fish per 1,000 feet of 1.5-2.5 inch stretch-measure gill net) in the juvenile Lake Trout (less than 17 inches) assessment, 2025.**

| Location | Effort in Feet | Corrected Effort in Feet* | Number of lake trout | Percent Wild | CPUE Wild | CPUE Stocked | CPUE Total |
|---|---|---|---|---|---|---|---|
| **MN-1** | | | | | | | |
| Lester River | 900 | 1,368 | 1 | 100% | 0.7 | 0.0 | 0.7 |
| Pumping Station | 900 | 1,368 | 4 | 100% | 2.9 | 0.0 | 2.9 |
| Stoney Point | 900 | 1,368 | 31 | 100% | 22.7 | 0.0 | 22.7 |
| Larsmont | 900 | 1,368 | 9 | 100% | 6.6 | 0.0 | 6.6 |
| Fisherman's Point | 900 | 1,368 | 4 | 100% | 2.9 | 0.0 | 2.9 |
| Encampment Island | 900 | 1,368 | 12 | 100% | 8.8 | 0.0 | 8.8 |
| **MN-1 Total** | **5,400** | **8,208** | **61** | **100%** | **7.4** | **0.0** | **7.4** |
| **MN-2** | | | | | | | |
| Split Rock | 900 | 1,368 | 33 | 100% | 24.1 | 0.0 | 24.1 |
| Silver Bay | 900 | 1,368 | 4 | 100% | 2.9 | 0.0 | 2.9 |
| Taconite Harbor | 900 | 1,368 | 7 | 100% | 5.1 | 0.0 | 5.1 |
| Tofte | 900 | 1,368 | 3 | 100% | 2.2 | 0.0 | 2.2 |
| **MN-2 Total** | **3,600** | **5,472** | **47** | **100%** | **8.6** | **0.0** | **8.6** |
| **MN-3** | | | | | | | |
| Grand Marais | 900 | 1,368 | 12 | 100% | 8.8 | 0.0 | 8.8 |
| Hovland | 900 | 900 | 4 | 100% | 4.4 | 0.0 | 4.4 |
| Grand Portage | 900 | 1,368 | 16 | 100% | 11.7 | 0.0 | 11.7 |
| **MN-3 Total** | **2,700** | **3,636** | **32** | **100%** | **8.8** | **0.0** | **8.8** |
| **Shorewide Total** | **11,700** | **17,316** | **140** | **100%** | **8.1** | **0.0** | **8.1** |

For CPUE calculations fishing effort was corrected for two night sets (900 ft. actual effort x 1.52 = 1,368 feet except for Hovland, which was a one night set).

**Table 7. Commercial catch of Lake Trout (LAT) and Siscowet (SCT), Lake Trout CPUE (fish per 1,000 feet of net), percentage of commercial quota harvested, Lake Trout harvest in the sport fishery, and percentage of total Lake Trout harvest taken by commercial fishing, 2007-2025.**

| | MN-1 | | | | | | MN-2 | | | | | | MN-3 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | LAT harvest | SCT harvest | LAT CPUE | Percent of quota | Sport LAT harvest | Commercial percentage of LAT | LAT harvest | SCT harvest | LAT CPUE | Percent of quota | Sport LAT harvest | Commercial percentage of LAT | LAT harvest | SCT harvest | LAT CPUE | Percent of quota | Sport LAT harvest | Commercial percentage of LAT |
| 2007 | | | | | | | | | | | | | 470 | 92 | 17.4 | 19% | 4,350 | 10% |
| 2008 | | | | | | | | | | | | | 1,122 | 109 | 10.7 | 41% | 1,310 | 46% |
| 2009 | | | | | | | | | | | | | 1,246 | 100 | 13.6 | 45% | 2,450 | 34% |
| 2010 | | | | | | | 839 | 119 | 9.5 | 48% | 8,729 | 9% | 1,510 | 140 | 14.1 | 55% | 2,118 | 42% |
| 2011 | | | | | | | 1,118 | 89 | 6.4 | 60% | 4,711 | 19% | 1,713 | 106 | 16.8 | 61% | 2,484 | 41% |
| 2012 | | | | | | | 716 | 130 | 5.7 | 42% | 3,899 | 16% | 1,944 | 121 | 26.2 | 69% | 2,583 | 43% |
| 2013 | | | | | | | 1,224 | 113 | 7.2 | 67% | 4,728 | 21% | 1,959 | 48 | 37.9 | 67% | 1,638 | 54% |
| 2014 | | | | | | | 409 | 166 | 3.7 | 29% | 3,872 | 10% | 2,015 | 77 | 29.9 | 70% | 2,190 | 48% |
| 2015 | | | | | | | 287 | 88 | 3.6 | 19% | 4,923 | 6% | 2,468 | 216 | 19.6 | 89% | 3,254 | 43% |
| 2016 | | | | | | | 364 | 36 | 5.5 | 20% | 7,432 | 5% | 2,189 | 42 | 37.4 | 74% | 3,872 | 36% |
| 2017 | 475 | 0 | 19.2 | 95% | 17,346 | 3% | 1,139 | 67 | 11.8 | 60% | 5,294 | 18% | 2,431 | 64 | 32.6 | 83% | 5,366 | 31% |
| 2018 | 494 | 1 | 21.4 | 99% | 18,352 | 3% | 1,297 | 20 | 13.0 | 66% | 5,466 | 19% | 2,295 | 110 | 34.9 | 80% | 3,683 | 38% |
| 2019 | 349 | 0 | 13.7 | 70% | 12,651 | 3% | 576 | 46 | 7.0 | 31% | 3,924 | 13% | 2,353 | 158 | 28.0 | 84% | 2,163 | 52% |
| 2020 | 341 | 0 | 12.4 | 68% | 14,312 | 2% | 220 | 29 | 4.4 | 12% | 3,713 | 6% | 2,109 | 177 | 22.3 | 76% | 2,620 | 45% |
| 2021 | 398 | 2 | 16.9 | 80% | 18,623 | 2% | 288 | 44 | 4.2 | 17% | 5,251 | 5% | 1,625 | 155 | 17.1 | 59% | 2,672 | 38% |
| 2022 | 496 | 2 | 20.7 | 100% | 14,207 | 3% | 294 | 28 | 7.6 | 16% | 3,685 | 7% | 1,770 | 125 | 20.2 | 63% | 2,303 | 43% |
| 2023 | 566 | 0 | 17.4 | 81% | 18,311 | 3% | 495 | 16 | 16.0 | 26% | 8,450 | 6% | 2,091 | 58 | 16.3 | 72% | 3,897 | 35% |
| 2024 | 679 | 0 | 19.2 | 97% | 25,603 | 3% | 704 | 31 | 10.9 | 37% | 6,605 | 10% | 2,413 | 92 | 19.5 | 84% | 5,197 | 32% |
| 2025 | 282 | 0 | 18.2 | 40% | 25,980 | 1% | 1,101 | 48 | 13.7 | 57% | 5,692 | 16% | 2,657 | 75 | 17.7 | 91% | 3,824 | 41% |

**Table 8. Spawning-size Cisco biomass estimates (millions of pounds) from fall hydroacoustic surveys, 2015-2025. Lower and upper 95% confidence limits are shown.**

| Year | MN1 Nearshore | | | MN1 Offshore | | | MN2 Nearshore | | | MN2 Offshore | | | MN3 Offshore | | | Shorewide | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | Lower | Upper | Estimate | Lower | Upper | Estimate | Lower | Upper | Estimate | Lower | Upper | Estimate | Lower | Upper | Biomass | Lower | Upper |
| **2015** | 0.106 | 0.030 | 0.182 | 0.214 | 0.123 | 0.324 | 0.017 | 0.009 | 0.029 | 2.640 | 1.674 | 3.775 | 7.104 | 3.403 | 10.307 | 9.971 | 6.276 | 13.617 |
| **2016** | 0.127 | 0.057 | 0.211 | 0.156 | 0.083 | 0.230 | 0.005 | 0.004 | 0.006 | 2.271 | 1.191 | 3.402 | 2.539 | 1.631 | 3.441 | 5.127 | 3.713 | 6.570 |
| **2017** | 0.089 | 0.071 | 0.108 | 0.308 | 0.242 | 0.378 | 0.020 | 0.016 | 0.025 | 1.490 | 1.177 | 1.832 | 1.973 | 1.208 | 2.671 | 3.853 | 3.028 | 4.650 |
| **2018** | 1.377 | 0.716 | 2.085 | 0.631 | 0.455 | 0.810 | 0.478 | 0.257 | 0.714 | 3.892 | 3.294 | 4.547 | 1.821 | 1.343 | 2.341 | 8.224 | 7.135 | 9.313 |
| **2019** | 2.258 | 1.154 | 3.360 | 0.598 | 0.310 | 0.891 | 0.608 | 0.201 | 1.020 | 1.955 | 0.865 | 2.929 | 2.684 | 1.741 | 3.623 | 8.043 | 6.209 | 9.849 |
| **2020** | | | | | | | | | | | | | | | | | | |
| **2021** | 0.263 | 0.103 | 0.459 | 0.480 | 0.078 | 0.951 | 0.087 | 0.034 | 0.151 | 3.154 | 2.538 | 3.819 | 3.700 | 2.438 | 4.918 | 7.694 | 6.248 | 9.152 |
| **2022** | 0.515 | -0.025 | 1.107 | 0.276 | 0.201 | 0.357 | 0.049 | 0.024 | 0.077 | 1.114 | 0.726 | 1.457 | 0.977 | 0.773 | 1.202 | 2.939 | 2.230 | 3.656 |
| **2023** | 0.140 | 0.096 | 0.192 | 0.130 | 0.125 | 0.134 | 0.074 | 0.044 | 0.124 | 1.562 | 1.241 | 1.881 | 4.149 | 3.421 | 4.919 | 6.076 | 5.280 | 6.900 |
| **2024** | 2.641 | 1.439 | 3.715 | 2.411 | 1.730 | 3.108 | 0.439 | 0.332 | 0.555 | 2.886 | 1.322 | 4.731 | 3.521 | 2.843 | 4.194 | 11.944 | 9.658 | 14.282 |
| **2025** | 0.390 | 0.240 | 0.541 | 0.457 | 0.217 | 0.690 | 0.060 | 0.027 | 0.093 | 2.511 | 1.875 | 3.132 | 5.247 | 4.591 | 5.864 | 8.659 | 7.689 | 9.605 |