Lake Ontario August gillnet survey and Lake Trout assessment, 2025

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Abstract

Lake Ontario Lake Trout (*Salvelinus namaycush*) rehabilitation has been assessed with fishery dependent and independent surveys to evaluate program benchmarks and compare observations with management objectives since 1983. These surveys provide information on the abundance, strain composition, and performance of stocked Lake Trout, as well as information on levels of natural recruitment, and Sea Lamprey (*Petromyzon marinus*) wounding rates. Lake Trout catch per unit effort (CPUE) in the August gillnet survey was notably lower in 2025. Percentage of naturally produced Lake Trout in US waters continued to be relatively low for mature and immature fish. Sea Lamprey wounding rates on Lake Trout > 432 mm in 2025 were below management target in US waters with zero A1 wounds observed. Overall, the 2025 survey results suggest that Lake Trout indicators continue to meet some of the management objectives but are not showing signs of meaningful recruitment to the adult stock.

Data Release

The data associated with this report are publicly available with the following citation: O'Malley BP, Lantry BF, Weidel BC, Stahl SD, Mitchinson OM, Goretzke JA, Gorsky D, Holden JP, Bloomfield EJ, Sunderland L. 2026. Lake Ontario Lake Trout Gillnet Survey 1983-2025. U.S. Geological Survey Data Release https://doi.org/10.5066/P14LXA9G.

Introduction

Restoration of a self-sustaining Lake Trout (*Salvelinus namaycush*) population in Lake Ontario is a binational management objective of the Lake Ontario Committee (Lantry et al. 2014; Stewart et al. 2017). In Lake Ontario, Lake Trout were historically abundant prior to European settlement, and served as a native top predator in the coldwater fish community along with Burbot (*Lota lota*) and Atlantic Salmon (*Salmo salar*; Smith 1995; Owens et al. 2003). By the mid-1950s, Lake Trout were considered extirpated in Lake Ontario, largely due to anthropogenic influences, such as overfishing, habitat degradation, and Sea Lamprey (*Petromyzon marinus*) predation (Christie 1972; Elrod et al. 1995). Initial attempts to rehabilitate the Lake Trout population by stocking fry (1896–1947) and fingerlings/yearlings (1953–1964) failed (Elrod et al. 1995). The advent of Sea Lamprey suppression in Lake Ontario in 1971 coincided with resumed attempts to stock Lake Trout with annual yearling and fingerling stocking events. Since the 1970s, annual stocking rates in United States (US) waters have varied from approximately 1 million spring yearling equivalents per year during the 1980s, to approximately 300,000 per year since 2019 (Elrod et al. 1995; Lantry et al. 2021; USFWS/GLFC 2025). Managers have stocked a variety of genetically distinct strains, and more recently, have broadened functional diversity by stocking a presumed deeper water morph (i.e., Superior Klondike Reef [SKW] 'humper' strain). In their wild source populations, 'humper' strains, are more easily explained as an intermediate between 'lean' and 'deepwater' morphs, have higher fat content, deeper bodies, and tend to feed mainly on benthic prey compared to lean morphs which rely more on pelagic prey (Muir et al. 2012). In Lake Erie, stocked Lake Trout from Klondike Reef broodstock exhibited differences in diet, maturation, and survival, compared to strains derived from lean morphs (Rogers et al. 2019). In Lake Ontario, observations suggest Klondike strain fish have higher egg thiamine concentrations, and consume a greater proportion of Round Goby (*Neogobius melanostomus*), compared to other strains (Heisey et al. 2023).

To measure progress on Lake Trout rehabilitation in Lake Ontario, collaborative fishery independent surveys using gillnets began in 1983 in US waters and expanded to include Canadian waters in 1985. This binational survey occurred lake-wide from 1985 to 1995 and in 2008 and 2024 (O'Malley et al. 2025). However, for most years, survey effort was limited to US waters only, which was once again the case in the 2025 survey results described herein. Some Lake Trout are also captured in Canadian waters during long term annual gillnet surveys carried out by the Ontario Ministry of Natural Resources known as the Community Index program (OMNR 2023). While the Community Index gillnet survey uses slightly different methods and does not specifically target Lake Trout, it provides information on Lake Trout rehabilitation progress in Canadian waters through time (Brenden et al. 2011; Bronte et al. 2022).

In this report, we summarized findings from the 2025 Lake Ontario August gillnet survey in context with long term trends from 1983 to 2025 in US waters. We report on Lake Trout population indicators relevant to the defined measures listed in the binational Lake Trout management strategy (Lantry et al. 2014).

Methods

From 1983 to 2025, the adult Lake Trout stock in US waters of Lake Ontario was assessed on an annual basis during August-September with gillnets fished along transects at randomly selected locations distributed across a subset of 17 (1983–1993) or 14 (1994–present) designated areas (Elrod et al. 1995). Beginning in 2022, the survey timing shifted to August to accommodate room for experimental trawling scheduled in September. The standard effort was typically three to four gillnets per transect. Survey design and gillnet construction (multi vs mono-filament netting) have changed through the years. For a description of survey history, including gear changes and corrections, refer to Elrod et al. (1995) and Owens et al. (2003). Since 1993, standard survey gillnets have consisted of monofilament netting with nine 15.2 x 2.4 m (50 x 8 ft) panels of 51 to 151 mm (2- to 6-in stretched measure) mesh in 12.5 mm (0.5 in) increments. Prior to 1993, standard survey gillnets were composed of multifilament netting with the same dimensions, except during 1990–1992 when one additional gillnet composed of monofilament netting was fished at each location for comparison.

The 2025 gillnet survey occurred from August-11 to August-27. Gillnets were fished at 12 out of 14 designated areas in US waters (Figure 1), in depths ranging from 10 to 86 m. At each designated area fished, one to four standard gillnets were set parallel to depth contours beginning at the 10° C isotherm and successively deeper at 10-m depth increments. Catches for each gillnet panel were sorted by species; total lengths (TL) and weights of individual fish were measured. Sex and maturity were determined by visual inspection of gonads. Presence and types of fin clips were recorded, and when present, coded wire tags (CWTs) were removed and decoded to retrieve information on age and strain for recaptured fish of hatchery-origin. Sea Lamprey wounds on Lake Trout were counted and graded according to King Jr. and Edsall (1979) and Ebener et al. (2006).

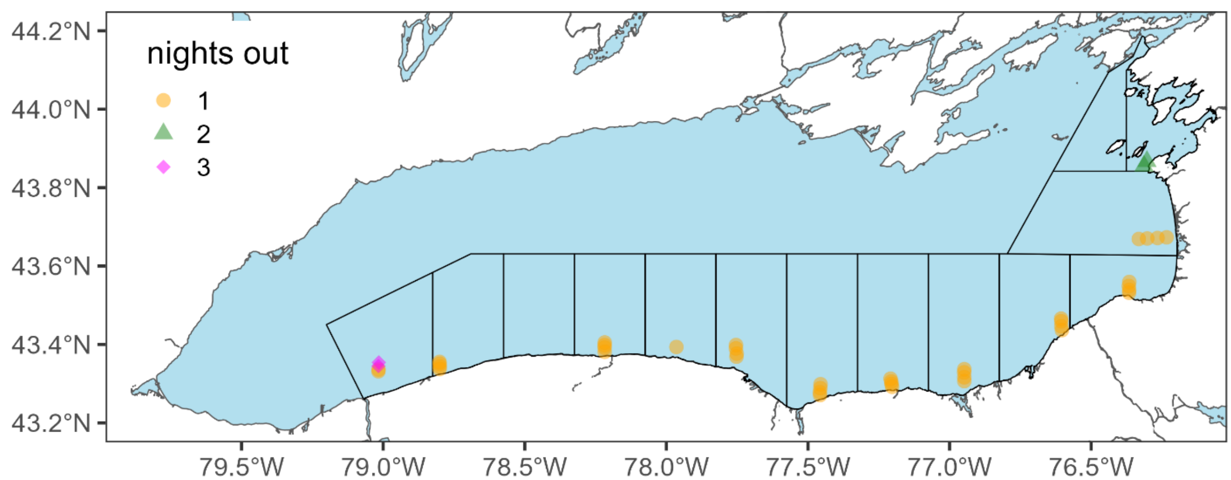

Figure 1. Lake Ontario gillnet locations fished during the 2025 August gillnet survey, coded by the number of nights out in the lake. Nights out, refers to the amount of calendar days between when a gillnet was set and retrieved from the lake. Black lines delineate the standard designated areas of the gillnet survey.

Because effort varied across locations and catch per net generally decreases with depth from the thermocline, a stratified catch per unit effort (CPUE) was calculated using four depth-based strata, representing net position from shallowest to deepest. Abundance indices were calculated from the standard gillnets fished starting at 10° C. Gillnets were fished for one night and the unit of effort was one overnight set per net. During the 2025 survey, retrieval of some gillnets was not possible after the first night out because of strong winds. Catches from these gillnets were not used in abundance calculations. Survival of different year classes and strains was estimated by taking the antilog slope from the linear regression of the natural logarithm (CPUE) as a function of age for fish ages 7 to 11 years that received CWTs. Population survival was based on catches for all strains combined for the 1983–1995 and 2003–2015 cohorts, as all fish stocked during those periods received CWTs. We summarized demographic trends by sex and maturity, and for large (≥ 4,000 g) female Lake Trout. We calculated wounding rates from Sea Lamprey as the number of A1 (fresh wounds where a lamprey has recently detached) wounds per 100 Lake Trout > 432 mm TL. For indices of natural reproduction, based on gillnet catches, we quantified the percentage and CPUE of hatchery-origin Lake Trout (i.e., those with CWTs or fin clip marks) to putative-wild fish (i.e., unmarked fish). We also derived an index of natural reproduction from the Lake Ontario April bottom trawl survey expressed as the depth-stratified number of fish per hectare. Bottom trawl indices are presented for US (1978–2025) and Canadian (2015–2025) waters separately by size class (greater or less than 500 mm TL). For more details on the April bottom trawl survey refer to Weidel et al. (2025a). We also report on the estimated number of Lake Trout harvested by anglers. The New York State Department of Environmental Conservation (NYSDEC) fishing boat survey has been conducted each year from 1985 to 2025 (except 2020). For more details on the fishing boat survey and methods used to estimate angler harvest, refer to Connerton and Moore (2025).

Results and Discussion

The goal of the Lake Ontario Lake Trout Management Strategy is to restore a self-sustaining population of Lake Trout. In the results below, we first summarize findings from the 2025 survey in terms of total catch, abundance, and strain composition. We compare Lake Trout population indicators from survey data to specific management objectives or strategies, and their respective measures from Lantry et al. (2014).

Total catch, abundance, and strain composition in 2025

Overall, a total of 511 Lake Trout were caught across all 43 gillnets, including those fished for > 1 night out in 2025 (Appendix 1). One putative bloater (*Coregonus hoyi*) was caught at Youngstown and is pending genetic confirmation which could represent the first bloater caught in the survey. After filtering out gillnets fished for > 1 night out, this resulted in a total of 418 Lake Trout across 39 gillnets used for analysis.

Total Lake Trout abundance (stratified CPUE) in 2025 was 10.5 fish/net (Figure 2) which was lower than the amount observed in US waters in 2024 (13.1 fish/net), and significantly lower than the mean during the past 10 years (2015–2024 mean = 15.0 fish/net ± 2.6 SD; one-sample t-test: $t_9 = 5.55$, $P < 0.01$). Abundance of mature male Lake Trout in 2025 was 5.66 fish/net, which was significantly lower than the mean during the past 10 years (2015–2024 mean = 8.0 fish/net ± 1.4 SD; one-sample t-test: $t_9 = 5.09$, $P < 0.01$). Abundance of mature female Lake Trout in 2025 was 3.78 fish/net, which was similar to the mean during the past 10 years (2015–2024 mean = 4.2 fish/net ± 0.7 SD; one-sample t-test: $t_9 = 1.72$, $P = 0.12$). Total immature Lake Trout abundance in 2025 was 1.10 fish/net, which is the lowest abundance of immatures observed during 1983–2025.

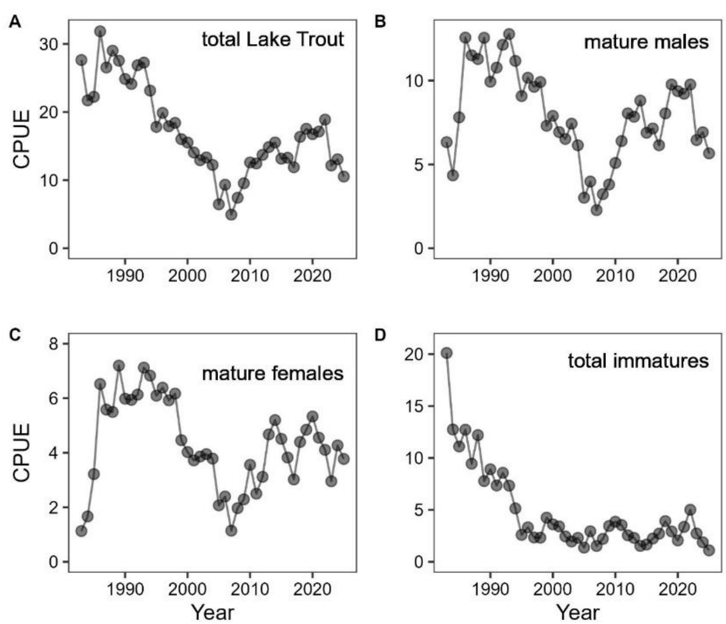

Figure 2. Abundance (stratified catch per unit effort, CPUE) of (A) total Lake Trout, (B) mature male Lake Trout, (C) mature female Lake Trout, and (d) total immature Lake Trout captured in the Lake Ontario August gillnet survey and Lake Trout assessment 1983–2025. Note the difference in y-axis scales among panels.

In total, 349 hatchery-origin Lake Trout with CWTs were recaptured in the 2025 survey (Appendix 2). Lake Trout with CWTs recaptured in 2025 in US waters ranged from 2 to 30 years in age (Appendix 3) and were represented by four different strains: SKW (32.1%), Seneca Lake (SEN, 26.9%), Lake Champlain (LC, 27.2%), and Huron Parry Sound (HPW, 13.8%). Of the remaining 69 fish without CWTs, 55 had adipose-only fin clips, five had adipose plus another fin clipped, and nine had no fin clips present.

Management Objective 1: Increase abundance of stocked Lake Trout to a level allowing for significant natural reproduction.

> <u>Measure:</u> *CPUE of mature females ≥ 4,000 g greater than 2.0 fish per standard assessment gill net set in US waters.*

In 2025, CPUE (unstratified) of mature female Lake Trout ≥ 4,000 g in US waters was 1.97 fish/net (Figure 3) which, after rounding, is equal to the minimum desired abundance of mature females established in the management strategy (Schneider et al. 1998; Lantry et al. 2014). Since 2010 the CPUE of mature females ≥ 4,000 g has appeared to recover from a below-target period during 2005–2009 (average CPUE = 1.4 fish/net ± 0.4 SD), to a period of mostly above-target values (average CPUE = 2.4 fish/net ± 0.4 SD). The abundance was at or below target for only three out of the last 16 years (2012, 2023, and 2025).

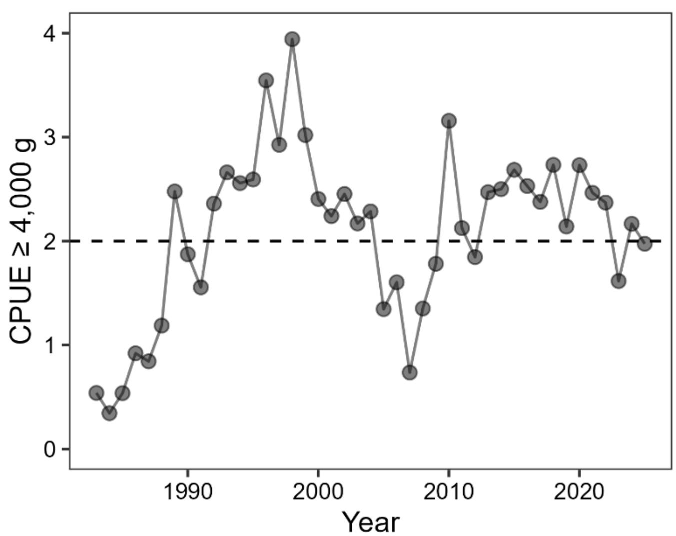

Figure 3. Abundance (catch per unit effort (CPUE) unstratified) of mature female Lake Trout ≥ 4,000 g calculated from gillnet catches in the Lake Ontario August gillnet survey and Lake Trout assessment 1983–2025. The dashed line represents the target CPUEs for the Management Objective 1 Measure: CPUE of mature females ≥ 4,000 g greater than 2.0 fish per standard assessment gill net set in US waters (Lantry et al. 2014).

Management Objective 2: Increase populations of wild Lake Trout across a range of age groups.

> <u>Measure:</u> *Measurable increase in catches of wild juveniles and adults in assessment catches, with values exceeding those observed during 1994–2011.*

While gillnet and bottom trawl surveys have detected young wild Lake Trout in Lake Ontario (Lantry et al. 2021; Weidel et al. 2025a), these numbers haven't translated to the adult population. The percentage of wild mature fish remains low and shows no significant upward trend (Figure 4). In 2025, nine of the 418 Lake Trout (2.2%) were identified as wild in our standard gillnets (CPUE = 0.23 fish/lift). Of the nine wild fish, three were immature and six were mature fish. The mean CPUE of immature wilds during 2020–2025 (0.22 fish/lift) was significantly greater than the 1994–2011 mean (0.07 fish/lift; t-test: t =

2.87, df = 5.40, *P* = 0.03). CPUE of wild immature fish has shown a declining trend over the past 4 years from a record high in 2022. Conversely, mean CPUEs of mature wilds were similar between 1994–2011 (0.16 fish/lift) and 2020–2025 (0.20 fish/lift; t-test = 0.78, df = 10.50, *P* = 0.45). Since 2011, both immature and mature wild Lake Trout CPUEs have not shown an increasing or decreasing trend between 2012–2025 (immature: $F_{1,11}$ = 1.84, *P* = 0.20, R^2 = 0.07; mature: $F_{1,11}$ = 1.11, *P* = 0.32, R^2 = 0.01). April bottom trawling has generally detected few wild juvenile (< 500 mm) and adult (> 500 mm) Lake Trout since trawling began in US waters in 1978 and in Canadian waters in 2015 (Figure 5; Weidel et al. 2025a). However, since 2015, wild juvenile fish have become more frequent in trawl catches especially in the vicinity where the Niagara River empties into Lake Ontario.

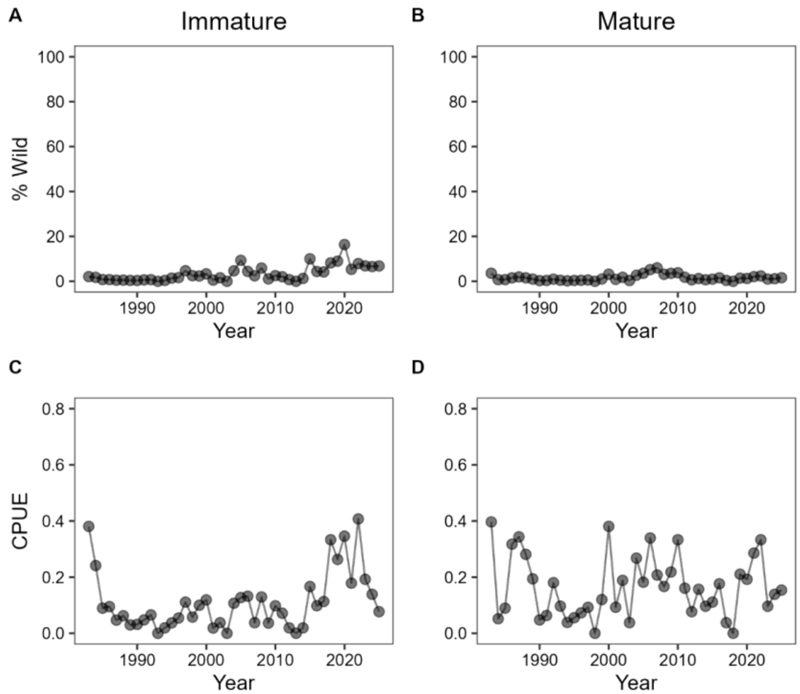

Figure 4. Top – The percentage of wild (no fin clip markings or coded wire tags) Lake Trout for (A) immature and (B) mature fish by year. Bottom – the catch per unit effort (CPUE) of wild (C) immature and (D) mature Lake Trout in the Lake Ontario August gillnet survey 1983–2025.

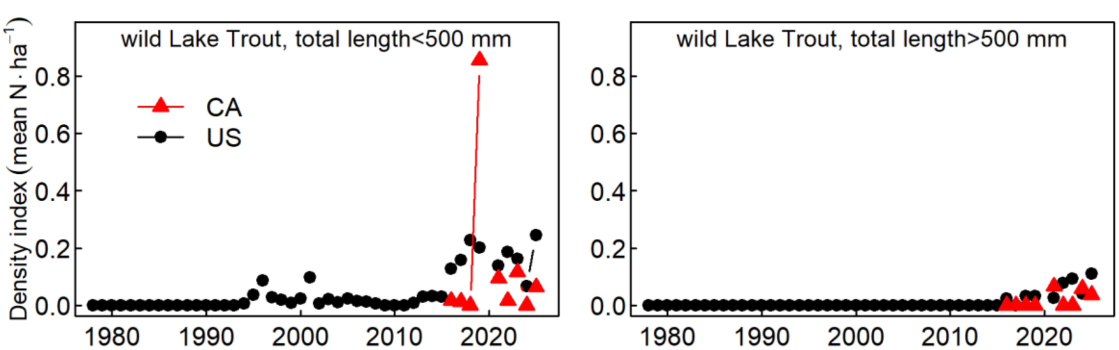

Figure 5. Wild Lake Trout density (number per hectare) per year by size class (left) < 500 mm total length (TL), and (right) > 500 mm TL in US and Canadian waters of Lake Ontario from the April bottom trawl survey from Weidel et al. (2025a); data are available in a U.S. Geological Survey data release (Weidel et al. 2025b).

Management Strategy 2: Minimize stocking and juvenile mortality by optimizing: stage, size, and condition at stocking; stocking methods; stocking locations.

<u>*Measures:*</u>

- *U.S.: adjusted catch rate of age-2 fish per 500,000 stocked ≥ 200 fish per standard survey*

This specific measure (e.g., catch rate of age-2 fish per number stocked) was intended to be used with the July bottom trawl survey data which ended in 2020 (Lantry et al. 2014; Lantry et al. 2022). In lieu of this information gap since the survey ended, we developed year-class specific relative survival indices based on the number stocked and gillnet catches at age. Relative survival of stocked year-classes, expressed as the CPUE by age per 500,000 stocked (ages 3-7), can be used to inform the ability of stocked fish to survive and contribute to the adult population. Stocked fish numbers were converted to spring yearling equivalents using the standard conversion rate of 2.4 (Elrod et al. 1988; LOC 2025). Similar approaches have been used in Lake Superior (Hansen et al. 1994) and subsequently adopted for Lake Huron (LHTC 2014). Relative survival was generally low across age groups for stocked year-classes during the late 1990s to early 2000s (Figure 6). In contrast, relative survival of more recent year-classes since the late 2000s has generally been higher, but highly variable from one year to the next, especially for ages 5-7.

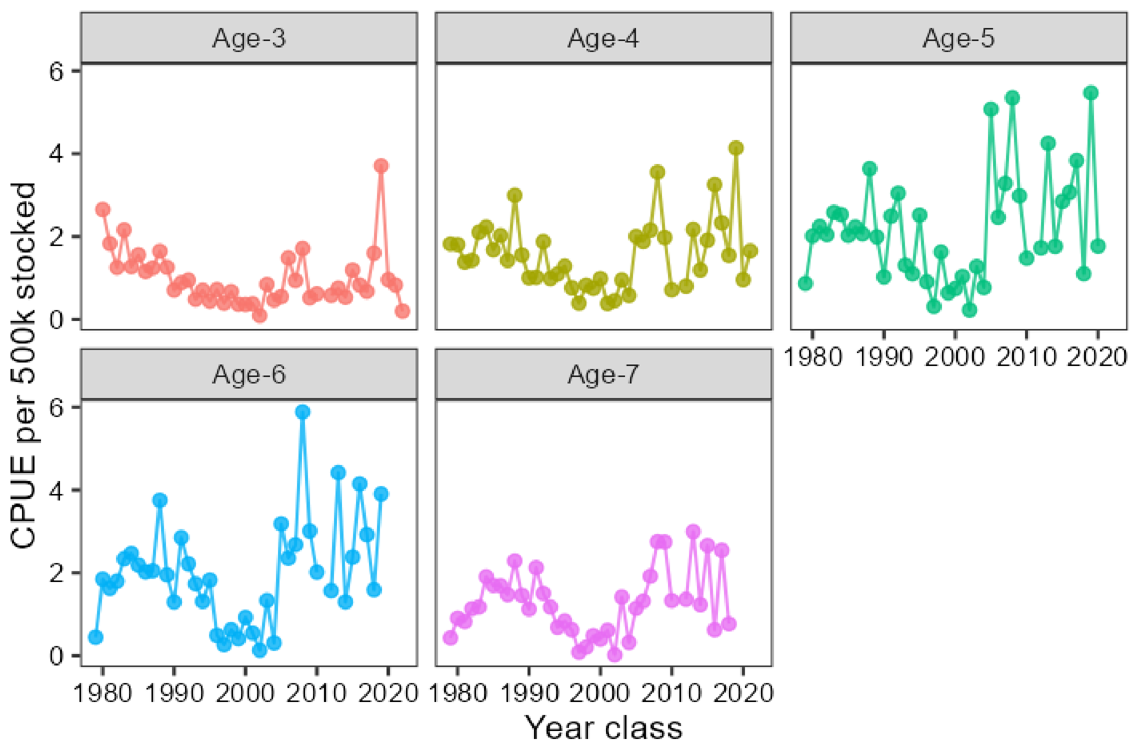

Figure 6. Relative survival (catch per unit effort at age, per 500,000 fish stocked) of the 1979–2022 year-classes of stocked Lake Trout at ages 3–7 in the Lake Trout gillnet survey.

Management Strategy 3: Maintain high survival of older fish by controlling Sea Lamprey and fishing mortality.

<u>*Measures:*</u>

- *Yearly survival of adult fish > 60 %*
- *Maintain the Sea Lamprey wounding rate in fall gillnetting at ≤ 2 A1 wounds per 100 Lake Trout > 432 mm total length*
- *Maintain annual harvest to < 10,000 fish in US waters*

Adult Survival

Survival of Seneca Lake (SEN) strain Lake Trout (ages 7 to 11) was consistently greater than that of Lake Superior (SUP) strain Lake Trout for the 1980–2003 year-classes (Figure 7; Appendix 4). Lower survival of SUP strain fish was likely due to higher mortality from Sea Lamprey predation (Schneider et al. 1996). Survival of both Jenny and Lewis Lake (JEN-LEW) strains (1984–1995 year-classes) were similar to the SUP strain, suggesting that those strains might also be highly vulnerable to Sea Lamprey. The Lake Ontario strain (ONT) was developed from egg collections of feral adults at a time when the composition of survey catches was predominantly SUP, SEN, and Clear Water Lake (CWL) strains (Elrod et al. 1995; Schneider et al. 1996); and the survival of 1983–1991 year-classes was intermediate to that of SENs and SUPs.

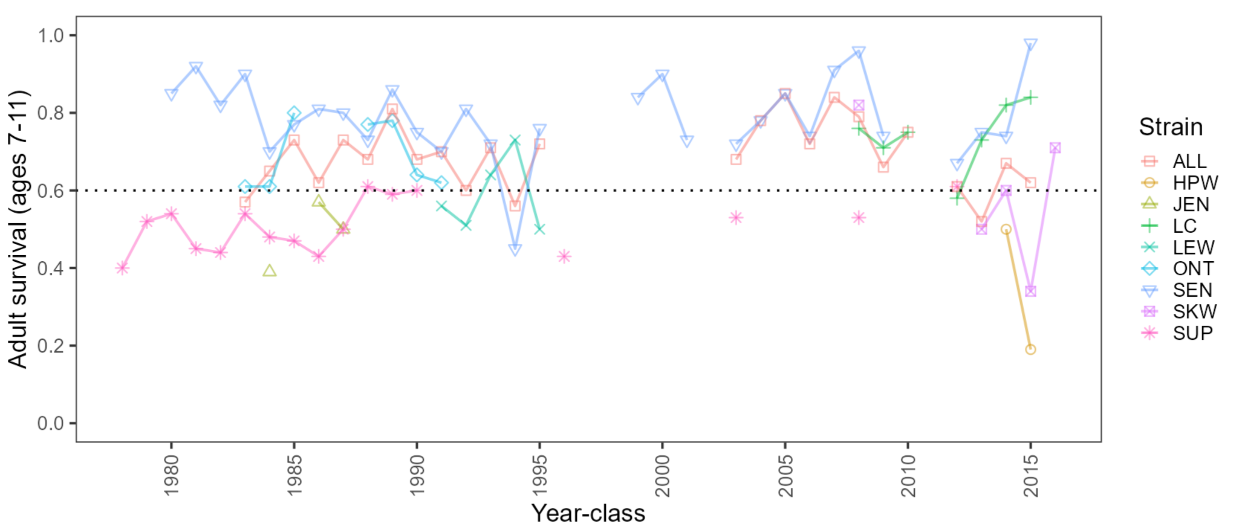

Figure 7. Annual survival of adult Lake Trout (ages 7–11) by strain and year-class, sampled from US waters of Lake Ontario during the Lake Ontario August gillnet survey 1985–2025. The 2015 and 2016 year-classes are represented by ages 7–10 and 7–9, respectively. Dashed line denotes the desired minimum survival rate of 60% from Lantry et al. (2014). "ALL" is population survival of all strains combined using only coded wire tagged fishes. Strain abbreviations are: HPW = Huron Parry Sound, JEN = Jenny Lake, LC = Lake Champlain, LEW = Lewis Lake, ONT = Lake Ontario, SEN = Seneca Lake, SKW = Superior Klondike Reef, SUP = Lake Superior. Refer to Appendix 4 for more information.

Population survival (ALL) exceeded the management strategy target of 60% beginning with the 1984 year-class and remained above target for most year-classes thereafter. However, population survival from the 2013 year-class (%) fell below target, and the average survival of the most recent year-classes (2012–2015) has been approximately equal to the target (ALL average = 60.5%). The 2015 year-class, assessed as ages 7–10 in 2025, showed notably high variation among strains, ranging from 98% for SEN to 19% for HPW. Strain-specific survival rates for the 2016 year-class (age 7–9 fish in 2025) could only be determined for SKW (71%) because either zero age 9 fish were detected in the 2025 survey (SEN, HPW), or CPUE at age 9 was greater than at age 7 and 8 for LC and ALL, likely an artifact of low sample size.

The SUP strain was no longer available in 2006 and the Traverse Island strain (STW) and Apostle Island strain (SAW), also both of Lake Superior origin, replaced SUPs in stockings from 2007–2009 and in 2009 and 2013, respectively. For simplicity, we grouped all Lake Superior strains except for the Klondike Reef strain under the SUP strain category. Strains from Seneca Lake origins included feral and domestic Lake Champlain strains (LCW and LC, respectively) beginning with the 2009 stockings. Survival for LC 2008–2010 and 2012 year-classes (58–76%) resembled their mostly SEN origins. Only one year-class of LCWs was stocked (2009) and its survival (73%, not shown in Appendix 4) was also similar to SENs. Survival rates could not be calculated for the first large stocking of STWs (225,000 of the 2006 year-class) as they disappeared from survey catches after age 8. Survival for the 2007 (36%, ages 7–11) and the 2008 (41%, ages 7–11) year-classes of STWs was relatively low and similar to early values for SUPs. Survival rates for the SAW (53%, 2008 year-class grouped as SUP in Appendix 4) strain was also low and no 2008 SAWs were caught in 2018 or 2019. There were no SAWs stocked during 2010–2012 (2009–2011 year-classes), but the 2012 year-class of SAWs (stocked in 2013) observed in survey catches at ages 7–11 during 2019–2023 also experienced relatively low survival (61%).

The first stocking of SKW occurred in 2009 (2008 year-class) which reached age 11 in 2019. SKW survival for the 2008 year-class was 82% (ages 7–11) and similar to SEN strain survival for the 2007 and 2008 year-classes, which were > 90%. Further stockings of SKWs occurred during 2014–2018, with the 2013 year-classes reaching age 11 in 2024. Survival of the 2013 year-class of SKWs age 7-11 (50%) was lower than the 2008 year-class. The first stocking of the HPW strain occurred in 2015, and survival of the 2014 and 2015 year-class of HPW and SKWs, was lower compared to LC and SEN from the same year-classes. Survival of the 2016 year-classes was difficult to estimate with confidence because CPUE of age 9 for some strains was zero or exceeded that of age 7 and 8.

Sea Lamprey Wounding

Rates of A1 Sea Lamprey wounds on Lake Trout were low in most years since the mid-1980s in US waters compared to high rates during 1975–1980 (Lantry et al. 2021; Figure 8). In 2025, zero A1 wounds were observed in US waters among 407 Lake Trout > 432 mm TL for a wounding rate of 0 A1 wounds per 100 fish, which is below the management target level (< 2 A1 wounds per 100 Lake Trout > 432 mm TL) specified in Lantry et al. (2014). Host CPUE (Lake Trout per net unstratified), expressed as the CPUE of Lake Trout > 432 mm TL, was lower in US waters during 2025 (10.4 fish/net) compared to the previous seven years of survey results.

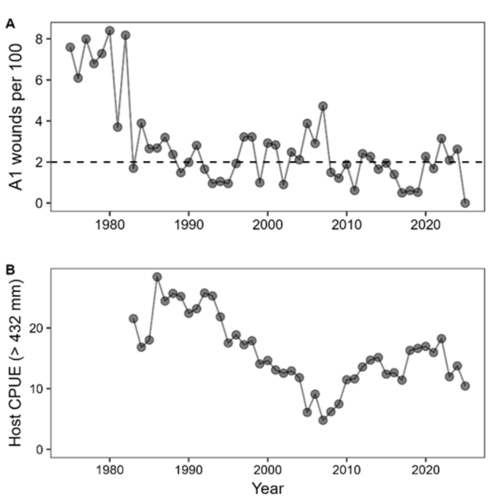

Figure 8. (A) Wounding rates (A1 wounds per 100 Lake Trout) inflicted by Sea Lamprey on fish > 432 mm total length (TL) and (B) the gillnet CPUE of Lake Trout hosts > 432 mm TL during 1983–2025. Dashed line denotes the recommended target level (≤ 2 wounds per 100 Lake Trout > 432 mm TL). Data from 1975–1982 are from Lantry et al. (2021).

Harvest

Fishing regulations, Lake Trout population size, and availability of other trout and salmon species influenced angler harvest through time (Connerton et al. 2020). During 1988–1992, managers implemented a slot size limit to decrease harvest of mature Lake Trout and increase the number and ages of spawning adults in the population (Elrod et al. 1995). The slot limit from 1992 persisted through 2006, permitting a limit of three Lake Trout harvested outside of the protected length interval of 635 to 762 mm (25 to 30 inches). Effective October 1, 2006, the Lake Trout creel limit was reduced to two fish per day per angler, one of which could be within the 635 to 762 mm slot. Estimated catch and harvest of Lake Trout in US waters of Lake Ontario from April 15 to September 30, 2025, was 12,940 and 8,731, respectively (Figure 9). Harvest in 2025 was below the 10,000 fish target level for US waters established by the Lake Trout Management Strategy (Lantry et al. 2014).

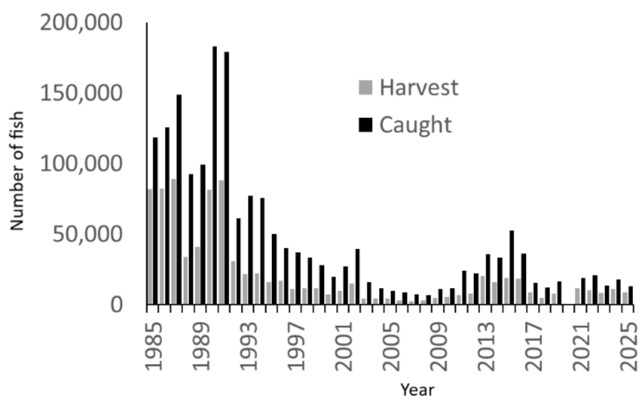

Figure 9. Estimated amount (number of fish) of Lake Trout catch and harvest by fishing boat anglers in US waters of Lake Ontario, during April 15 – September 30, 1985–2025 (Connerton and Moore 2025). Beginning in 2012, all values have been reported reflecting a 5.5-month sampling interval. Prior reports were based on a 6-month sampling interval.

Acknowledgements: We thank the USGS and NYSDEC staff over the decades that have made data collection possible. We thank Joe Schmitt, Pascal Wilkins, Sophia Ruh, Lyndsie Collis, and Tara Bell for providing reviews of the report, data release, and metadata. Funding for USGS sampling, data management, analysis, and reporting was provided from the USGS Ecosystems Mission Area, Species Management Research Program. Funding for the NYSDEC portion was from the Federal Aid in Sport Fish Restoration Program. All USGS fish handling was carried out in accordance with guidelines from the American Fisheries Society. Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

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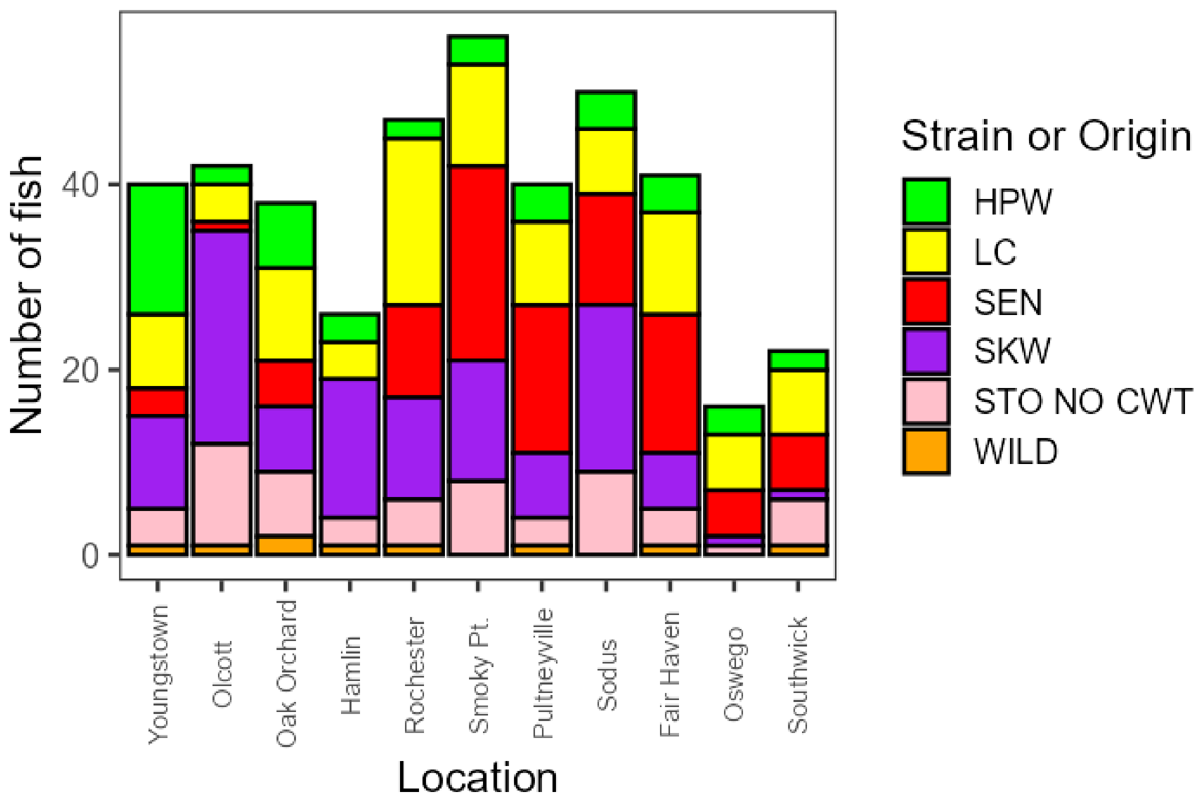
Appendices

Appendix 1. Number of fish caught by species in gillnets in the 2025 Lake Ontario August gillnet survey and Lake Trout assessment. Number caught in all gillnets includes catches from gillnets fished > 1 night out, whereas the number caught in standard nets includes only catches from gillnets fished for 1 night out.

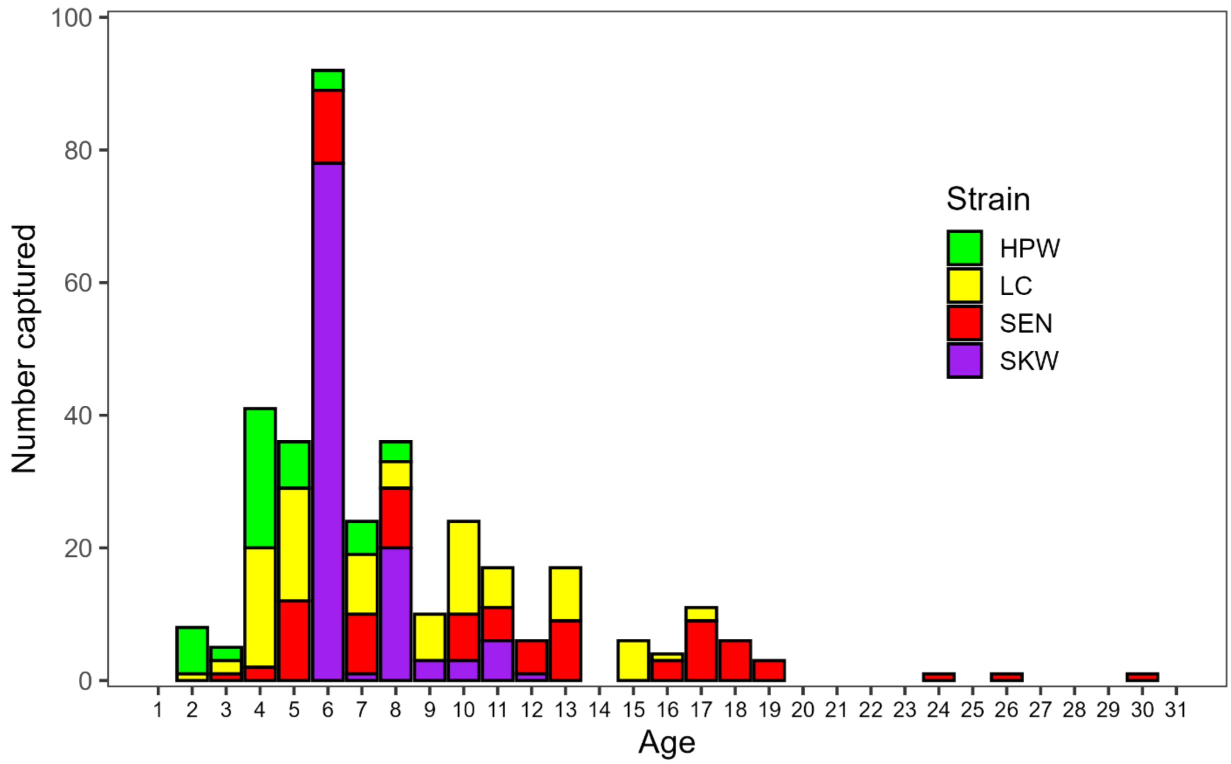
Common name	Scientific name	Number caught in all gillnets (1-3 nights out)	Number caught in gillnets for abundance and trend analyses (1 night out)
Alewife	*Alosa pseudoharengus*	83	83
Brown Trout	*Salmo trutta*	16	13
Bloater*	*Coregonus hoyi*	1	0
Cisco	*Coregonus artedi*	5	5
Lake Trout	*Salvelinus namaycush*	511	418
Lake Whitefish	*Coregonus clupeaformis*	1	1
Rock Bass	*Ambloplites rupestris*	1	1
Round Goby	*Neogobius melanostomus*	2	2
Walleye	*Sander vitreus*	1	1
Yellow Perch	*Perca flavescens*	2	2

*2025 was the first time a Bloater was collected since the survey began in 1983.

Appendix 2. Number of Lake Trout caught by strain/origin and location during the 2025 Lake Ontario August gillnet survey and Lake Trout assessment. If a coded wire tag was present, then the fish was assigned to the corresponding strain. If a coded wire tag was not present, then the fish was categorized by origin – hatchery ("STO NO CWT" = stocked fish with a fin clip, but no coded wire tag) or wild ("WILD" = unclipped and unmarked). Note the difference in y-axis scales. Strain abbreviations are: HPW = Huron Parry Sound, LC = Lake Champlain, SEN = Seneca Lake, SKW = Superior Klondike Reef. For detailed strain descriptions, refer to Lantry et al. (2021).



Appendix 3. Age-strain distribution of coded wire tagged Lake Trout captured in US waters during the Lake Ontario August gillnet survey and Lake Trout assessment in 2025. Strain abbreviations are: HPW = Huron Parry Sound, LC = Lake Champlain, SEN = Seneca Lake, SKW = Superior Klondike Reef. For detailed strain descriptions, refer to Lantry et al. (2021).



Appendix 4. Annual survival of different Lake Trout strains sampled from US waters of Lake Ontario during the adult Lake Trout gillnet survey 1985–2025. Dashes represent missing values due to no or low numbers of tagged Lake Trout stocked for the strain, or when the strain was not in the US federal hatchery system. ALL is population survival of all strains combined using only coded wire tagged fishes. Values for ALL in some years are influenced by strains not included in the table because they only appeared in the lake for a short while (e.g., the 1991–1993 cohorts of OXS; the 2009 cohort of LCW) or because they only occurred before successful Sea Lamprey control was established (1974–1983 cohorts of CWL). Missing survival values for 1997, 1998, and 2002 year-classes were caused by low tagged proportions of total stockings. There were no Lake Trout stocked from the 2011 year-class. Reduced survey effort in 2020 contributed to missing values for the 2009 year-class of SENs at age 11. Strain abbreviations are: JEN = Jenny Lake, LEW = Lewis Lake, ONT = Lake Ontario, SUP = Lake Superior, STW = Traverse Island, SEN = Seneca Lake, LC = Lake Champlain, SKW = Superior Klondike Reef, HPW = Huron Parry Sound.

		STRAIN									
Year-class	Ages	JEN	LEW	ONT	SUP	STW	SEN	LC	SKW	HPW	ALL
1978	7-10	-	-	-	0.40	-	-	-	-	-	-
1979	7-10	-	-	-	0.52	-	-	-	-	-	-
1980	7-11	-	-	-	0.54	-	0.85	-	-	-	-
1981	7-11	-	-	-	0.45	-	0.92	-	-	-	-
1982	7-11	-	-	-	0.44	-	0.82	-	-	-	-
1983	7-11	-	-	0.61	0.54	-	0.90	-	-	-	0.57
1984	7-11	0.39	-	0.61	0.48	-	0.70	-	-	-	0.65
1985	7-11	-	-	0.80	0.47	-	0.77	-	-	-	0.73
1986	7-11	0.57	-	-	0.43	-	0.81	-	-	-	0.62
1987	7-11	0.50	-	-	0.50	-	0.80	-	-	-	0.73
1988	7-11	-	-	0.77	0.61	-	0.73	-	-	-	0.68
1989	7-11	-	-	0.78	0.59	-	0.86	-	-	-	0.81
1990	7-11	-	-	0.64	0.60	-	0.75	-	-	-	0.68
1991	7-11	-	0.56	0.62	-	-	0.70	-	-	-	0.70
1992	7-11	-	0.51	-	-	-	0.81	-	-	-	0.60
1993	7-11	-	0.64	-	-	-	0.72	-	-	-	0.71
1994	7-11	-	0.73	-	-	-	0.45	-	-	-	0.56
1995	7-11	-	0.50	-	-	-	0.76	-	-	-	0.72
1996	7-10	-	-	-	0.43	-	-	-	-	-	-
1999	7-11	-	-	-	-	-	0.84	-	-	-	-
2000	7-11	-	-	-	-	-	0.90	-	-	-	-
2001	7-11	-	-	-	-	-	0.73	-	-	-	-
2003	7-11	-	-	-	0.53	-	0.72	-	-	-	0.68
2004	7-11	-	-	-	-	-	0.78	-	-	-	0.78
2005	7-11	-	-	-	-	-	0.85	-	-	-	0.85
2006	7-11	-	-	-	-	-	0.74	-	-	-	0.72
2007	7-11	-	-	-	-	0.36	0.91	-	-	-	0.84
2008	7-11	-	-	-	0.53	0.41	0.96	0.76	0.82	-	0.79
2009	7-11	-	-	-	-	-	0.74	0.71	-	-	0.66
2010	7-11	-	-	-	-	-	-	0.75	-	-	0.75
2012	7-11	-	-	-	0.61	-	0.67	0.58	-	-	0.61
2013	7-11	-	-	-	-	-	0.75	0.73	0.50	-	0.55
2014	7-11	-	-	-	-	-	0.74	0.82	0.60	0.50	0.67
2015	7-10	-	-	-	-	-	0.98	0.84	0.34	0.19	0.62
2016	7-9	-	-	-	-	-	-[*]	1.00[#]	0.71	-[*]	1.00[#]

[*] Zero age-9 SEN and HPW were caught in the 2025 survey.

[#] Catch per unit effort (CPUE) of LC and ALL at age 9 was greater than at age 7 and 8 so survival value was set to 1.00.