New York’s 2018 Lake Ontario Fisheries Program Highlights

The following information summary is preliminary and selective. Comprehensive, final results will be reported in the “2018 Annual Report of the Bureau of Fisheries Lake Ontario Unit and St. Lawrence River Unit to the Great Lakes Fishery Commission’s Lake Ontario Committee,” which will be posted at www.dec.ny.gov/outdoor/27068.html in spring 2019. Results reported below were generated through collaborative fisheries and ecosystem monitoring and research programs conducted by the NYS Department of Environmental Conservation (DEC), US Geological Survey (USGS), Ontario Ministry of Natural Resources and Forestry (OMNRF), US Fish and Wildlife Service (USFWS), and academic partners. For more information, contact:

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Sport fishery Assessments

Open Lake Fishing Boat Survey

- Overall fishing quality for trout and salmon was good to excellent in 2018. The four most sought-after species are Chinook salmon, brown trout, rainbow trout, and coho salmon, and regulations allow a daily harvest limit of “3 in any combination” of these four species. In 2018, charter boat fishing quality (catch rate = number of fish caught per hour of angling) for these four species combined increased 25% from 2017 to the highest level on record (Figure 1), mostly due to record high Chinook catch rates and good brown trout fishing.

- Chinook salmon fishing quality among charter boats has been excellent from 2003-2018. Fishing quality in 2018 was the highest recorded, with record high catch rates in May, June, August and September, and record high seasonal catch rates in all regions.

- After three years of below average brown trout fishing quality, brown trout catch rates in 2018 improved to 43% above the long-term average. Fishing quality for brown trout was excellent in April and May (second best recorded), and catch rates were above average from July through September.

- Fishing quality for coho salmon in 2018 was average overall, with relatively poor catch rates in April, July and August, and above average catch rates in May, June and September.

- Rainbow trout fishing quality was at record high levels each year 2008-2014; however, declined markedly during 2015 and 2016. After temporarily improving in 2017, catch rates declined again in 2018 to 40% below the long-term average. However, the decline is partly attributed to excellent fishing quality for other trout and salmon species (i.e., Chinook salmon and brown trout) which may have reduced fishing effort specifically targeting rainbow trout.

- Following the 2007 record low, lake trout fishing quality improved each year 2008-2013, remained relatively stable from 2013-2016, then declined in 2017 and again in 2018 to 66% below the long-term average. Similar to rainbow trout, the decline is partly attributed to excellent fishing quality for other trout and salmon species (i.e., Chinook salmon and brown trout) which may have reduced fishing effort specifically targeting lake trout.
Fishing quality for Atlantic salmon in 2018 remained relatively high and was 4.1 times higher than the 1995-2008 average (i.e., the period of lowest catch rates). However, catch rates for Atlantic salmon remain very low when compared to other salmonids.

An estimated 252,976 trout and salmon were caught in 2018 (primarily Chinook salmon [69%] and brown trout [16%]). Total harvest of trout and salmon was estimated at 142,447 fish, dominated by Chinook salmon (71%) and brown trout (16%).

After declining to a record low in 2017 (partially due to extremely high-water levels), fishing effort directed at trout and salmon in 2018 increased 33% and was equal to the previous 10-year average.

The number of sea lamprey observed per 1,000 trout and salmon caught was estimated at 21.1 in 2018 (an increase from 2017 and 20% above the previous 10-year average); however, Lake Ontario sea lamprey control remains the most effective in the Great Lakes (see also “Sea Lamprey Control” below).

The estimated number of fishing boat trips targeting smallmouth bass during the traditional open season (3rd Saturday in June through September 30 when the creel survey ends) was 4,135 bass trips in 2018, an 80% increase from the record low observed in 2017. However, smallmouth bass fishing effort in 2018 was the 2nd lowest on record and 12% below the recent 5-year average. Bass fishing quality in 2018 increased 148% compared to the 2010 record low and was 71% above the previous 10-year average.

**Figure 1.** Trout and salmon fishing quality (catch rate=fish caught per hour of angling) for charter boats fishing the open waters of Lake Ontario April 15- September 30, 1985-2018. Note different catch rate axes for Chinook and 3-in-any-combination.
• NYSDEC conducted a Salmon River angler survey from September 2017 through mid-May 2018.
• Total estimated fishing effort during the survey was 127,166 angler trips totaling 733,753 angler hours, the second highest effort estimate on record (2011-12 survey had 1,077,316 angler hours).
• Chinook salmon were the most abundant species caught with an estimated 109,840 fish caught and 34,934 harvested, the highest estimated since the early 1990s.
• Steelhead were the second most caught species during the survey with an estimated 45,111 fish caught and 5,535 harvested, a substantial increase from the low numbers estimated in the previous, 2015-16 survey (25,335 caught and 3,427 harvested).
• Estimated catch and harvest of coho salmon was 15,167 and 5,746, respectively, also a substantial increase from the low estimates in fall 2015 (5,380 caught and 2,163 harvested).
• Relatively few brown trout and Atlantic salmon were caught (1,898 and 50 fish, respectively).
• DEC will be holding a State of the Salmon River meeting on April 11, 2019 in Pulaski NY to discuss progress being made on management actions identified in the 2018 Salmon River Fisheries Management Plan.

2018 Lake Ontario Stocking, Fall 2018 Salmon Egg Collections/2019 Stocking Levels
• Fish stocking in the New York waters of Lake Ontario in 2018 included approximately 1.29 million Chinook salmon, 158,034 coho salmon, 620,780 rainbow trout, 434,180 brown trout, 199,535 Atlantic salmon, 398,255 lake trout, and 107,600 walleye.
• A multi-agency, international effort to rehabilitate native coregonines (members of the whitefish family) in Lake Ontario continued in 2018 with the stocking of approximately 87,674 fall fingerling bloater by the USGS and 91,653 yearling and older bloater by OMNRF. Bloater are one of four extirpated species of deep water coregonines that once dominated Lake Ontario’s forage base. USGS and USFWS are also conducting research on cisco, a shallow water coregonine, to determine the feasibility of stocking to re-establish cisco spawning in Sodus and Irondequoit Bays. In 2018, a total of 520,674 cisco were stocked in two locations (Irondequoit and Sodus Bays) and two sizes (3- or 4-inch fall fingerlings).
• Fall 2018 Chinook and coho salmon egg collections exceeded targets, and survival has been good to date. We anticipate meeting our Chinook and coho salmon, rainbow trout/steelhead, brown trout, and lake trout stocking targets for 2019. Yearling Atlantic salmon stocking will be well below target in 2019 due to a power outage at DEC’s Adirondack Hatchery in spring 2018, however, the USGS Tunison Laboratory of Aquatic Sciences will supplement DEC stocking.
• Reduced adult alewife abundance in 2016 and 2017, along with relatively poor production of alewife in 2013 and 2014, prompted concern over future abundance of adult alewife and the number of predators that depend upon them (see Alewife bottom trawl survey below and http://www.dec.ny.gov/outdoor/111196.html). Following extensive public outreach in summer/fall of 2016, 2017, and 2018 the DEC and OMNRF decided to reduce Chinook salmon and lake trout stockings by 20% each in 2017 and 2018.
• 2018 Alewife survey results confirmed that these impacts are ongoing and indicated that the large numbers of alewife produced in 2016 experienced lower than expected survival. In addition, below average alewife production in 2017 heightened concerns over potential imbalance between alewife and their predators. Based on ongoing concerns with instability in the adult alewife population, Chinook salmon stocking in 2019 will be reduced by an additional 20%, while lake trout stocking will remain at a 20% reduction.
• Combined salmon and trout stocking by DEC in Lake Ontario in 2019 will still exceed 2.7 million fish. These numbers do not consider wild Chinook salmon production and increased survival of pen reared Chinook salmon. DEC biologists and fisheries managers are optimistic that excellent fishing will continue.

Lake Ontario Fisheries Management Focus Group/Potential Fishing Regulation Proposals
• The Lake Ontario Fisheries Management Focus Group (Focus Group) was formed in late 2017 specifically “to help DEC fisheries managers gain greater perspective on desired outcomes associated with the Lake Ontario salmonid fishery and determine where areas of consensus can be achieved amongst open lake and tributary anglers for inclusive management of the fisheries resource.”
• The Focus Group is temporary in nature and is comprised of four angler representatives (2 lake; 2 tributary) from each of the four Department Regions bordering Lake Ontario (Regions 6–9). DEC’s expected outcomes for the Focus Group process are:
Focus Group members will have a shared understanding of desired fisheries management outcomes and the rationale for such.

Department staff will develop a better understanding of the collective desires of anglers and also where potential improvements can be made to both open lake and tributary fisheries.

The first step in this process involved identifying each member’s desired fisheries management outcomes, rather than immediately focusing on how to “fix” perceived “problems.” Focusing on what sportfishery attributes are most important to anglers, DEC scientists and managers then provided lists of all potential management actions that could be employed to achieve each desired outcome, the scientific basis for those actions or lack thereof, and the risks/consequences associated with executing a management action.

For example, to enhance the Chinook salmon staging fishery, DEC staff identified 1) increasing numbers of Chinook salmon reared in pens; 2) earlier delivery of Chinook salmon to rearing pens; and 3) using premium fish feed for pen rearing as “viable” management actions, and all three options will be enacted in 2019.

The Focus Group process has also resulted in the expansion of steelhead pen rearing, and DEC is committing an additional $100,000 to support Chinook salmon and steelhead pen rearing projects (see Chinook Salmon and Steelhead Pen-Rearing Projects below).

An important milestone in the process was the consensus that Chinook salmon should be managed for the open lake fishery, whereas steelhead should be managed primarily for tributary fisheries. The resolution of several desired management actions focused on an array of potential fishing regulation proposals, each of which presented “trade-offs” for either lake or tributary fisheries:

- **GL-01 Extend the open season for lake trout in Lake Ontario and the Lower Niagara River**
  - **Description:** Open the Lake Ontario/Lower Niagara River lake trout season on December 1 (currently opens January 1). The season would be closed from October 1 through November 30.
  - **Rationale:** Anglers targeting rainbow trout/steelhead in the Lower Niagara River frequently catch lake trout. Since lake trout spawning is largely over by the end of November, opening the lake trout season on December 1 will provide anglers with additional opportunities to harvest trophy lake trout without jeopardizing lake trout restoration efforts.

- **GL-02 Reduce the daily creel limit for brown trout in Lake Ontario tributaries from 3 fish per day to 1 fish per day**
  - **Description:** Reduce the daily creel limit for brown trout in Lake Ontario tributaries by reducing the daily creel limit from 3 fish per day to 1 fish per day (excluding the Lower Niagara River).
  - **Rationale:** This potential change is intended to prolong high quality brown trout fishing opportunities through the winter months, while still allowing anglers the opportunity to harvest a trophy fish. Fishing effort on Lake Ontario tributaries can be intense each year from fall through spring, and maintaining high quality brown trout fishing opportunities relies on anglers releasing a high proportion of their catch.

- **GL-03 Increase the minimum size limit for rainbow trout/steelhead in Lake Ontario tributaries from 21” to 25”**
  - **Description:** Increase the minimum size limit for rainbow trout/steelhead on Lake Ontario tributaries from 21” to 25” (excluding the Lower Niagara River).
  - **Rationale:** This potential change is intended to prolong high quality rainbow trout/steelhead fishing opportunities through the winter months, while still allowing anglers the opportunity to harvest a trophy fish. Anglers have noted smaller rainbow trout/steelhead in recent years, and declining rainbow trout/steelhead fishing success as the winter season progresses.
- GL-04 Rainbow trout/steelhead creel reduction in the open waters of Lake Ontario
  - **Description:** Reduce the daily creel limit for rainbow trout/steelhead on Lake Ontario and the Lower Niagara River from 3 fish per day to 2 fish per day.
  - **Rationale:** Rainbow trout/steelhead provide the primary sportfishery in Lake Ontario’s tributaries from November through the following spring. This potential change is designed to increase numbers and sustainability of rainbow trout/steelhead in the tributary fishery by reducing open lake harvest during periods when Chinook fishing success in the lake declines and more anglers specifically target rainbow trout/steelhead.

- Although the Focus Group is temporary in nature, the Bureau of Fisheries will continue to use similar stakeholder outreach tools to improve the effectiveness of our efforts to improve sportfisheries and their economic benefits.

**Alewife Bottom Trawl Survey**
- The Lake Ontario alewife population is assessed by the U.S. Geological Survey (USGS), DEC, and OMNRF using a collaborative survey design that provides a whole lake estimate of alewife abundance.
- The 2018 spring bottom trawl survey collected 208 trawls in water depths from 19-752 ft in both US and Canadian waters.
- Adult Alewife abundance (Figure 2, left panel) decreased in 2018 relative to 2017 in U.S. waters, while the index in Canadian waters increased, illustrating the value of lake-wide surveys for measuring preyfish status.
- The 2018 Age-1 or “yearling” alewife abundance index (Figure 2, right panel), which measures reproductive success the previous year, was the third lowest observed in U.S. waters over the past 22 years. Canadian values were higher than U.S. values.
- Alewife condition indices (a measure of body “fatness”) were below the 10-year average for both the spring and fall indices.

**Figure 2**. Bottom trawl abundance indices for adult (Age-2 and older; left panel) and juvenile (Age-1; right panel) alewife. 2018 survey results are highlighted in the blue oval; estimates for alewife abundance in US waters are represented by black circles, and data from Canadian waters are represented by gray boxes. For reference approximately 52% of the lake is in Canada and 48% is U.S. waters (image credit B. Weidel, USGS).
Growth of Trout and Salmon Measured at the Salmon River Hatchery

- The mean weight of age-1 Chinook salmon males (jacks) sampled in 2018 was 4.4 pounds, among the lowest observed values in the 1988-2018-time series.
- Average weights of age 2 and 3 Chinook salmon measured at the Salmon River Hatchery were similar to 2017:
  - Age 2 Chinook salmon males averaged 13.4 pounds (0.5 pounds below average), while age 2 females averaged 12.6 pounds (2.0 pounds below average).
  - Age 3 Chinook salmon males averaged 15.8 pounds (same as 2017; over 3.0 pounds below average) and age 3 females averaged 15.3 pounds (3.5 pounds below average).
- Age-2 coho salmon males averaged 6.0 pounds (2.1 pounds below average), while age-2 female averaged 5.9 pounds (2.4 pounds below average).
- The mean weight of age-3 steelhead males was 5.7 pounds (0.2 pounds below average), while age-3 females averaged 5.6 pounds (0.7 pounds below average).
- The mean weight of age-4 steelhead males was 5.6 pounds (2.8 pounds below average), while females averaged 6.0 pounds (3.1 pounds below average).

Chinook Salmon and Steelhead Pen-Rearing Projects

- 2018 was the 21st year of volunteer-based pen-rearing projects for steelhead and Chinook salmon. Pen-rearing projects were initiated with the intent of improving survival and homing of pen-reared fish when compared to traditional, shore-stocked fish.
- DEC studies documented that Chinook salmon raised by sportsmen in net pens on average survive 2X better than traditional, direct-stocked fish.
- Approximately 570,230 Chinook salmon fingerlings were reared at nine pen sites comprising 44.3% of DEC’s 2018 Chinook salmon stocking allotment.
- Approximately 48,680 Washington strain steelhead yearlings were reared at seven sites, representing 9.2% of DEC’s 2018 steelhead stocking allotment.
- Cold temperatures in April 2018 resulted in reduced growth rates during the early portion of the pen rearing season. However, DEC was able to provide extra fish food and allow fish to be held in pens for an additional week. This allowed Chinook salmon to reach target size at 6 of 9 locations and steelhead to reach target size at 3 of 7 locations.
- DEC provided premium fish food for all Chinook salmon pen projects in 2018. Premium fish food should improve growth and condition of pen reared fish thereby increasing post stocking survival.
- DEC will provide premium fish food for both Chinook salmon and steelhead pens in 2019.
- The pen rearing program will be expanded in 2019 with the addition of four new steelhead pens at Oswego (1), Oak Orchard (2) and Olcott (1).
- The pen rearing program continues to be an extremely successful partnership between the DEC and volunteer angling groups that has significantly benefited the Lake Ontario fisheries. DEC has committed an additional $100,000 to maintain and expand the Lake Ontario pen rearing program.

Salmon River Wild Young-of-Year (YOY) Chinook Salmon Seining Program

- Seining has been conducted annually since 2001 to track wild YOY Chinook salmon production in the Salmon River, the largest source of wild Chinook salmon in New York.
- The mean peak catch in 2018 was 49 YOY Chinook per seine haul, the second lowest catch recorded in the survey. Low catches were unexpected given the favorable flow levels observed during spawning and incubation periods in 2017-2018, however, cold temperatures in April may have impacted hatching success.

Progress Towards Lake Trout Restoration

- Following low lake trout population levels during 2005-2007, adult lake trout abundance increased each year from 2008-2014, then declined each year 2015-2017. Adult lake trout abundance increased in 2018 to a level similar to the peak in 2014.
- The number of fresh sea lamprey wounds on lake trout in 2018 was below target and similar to the record low level reported in 2017, indicating effective sea lamprey control efforts (see also Sea Lamprey Control below).

**Eastern Basin Warmwater Fish Assessment**
- Since 1976, DEC has conducted an annual index gill net survey to evaluate the status of warmwater fish populations in Lake Ontario's Eastern Basin.
- The relative abundance of all species combined in 2018 was similar to the 2008-2017 (previous 10-year) average.
- As is typically observed, smallmouth bass and yellow perch dominated survey catches in 2018 representing 25% and 34% of the total catch, respectively.
- Smallmouth bass catch in 2018 remained relatively low compared to the long-term average but was 25% higher than the 2013-2017 (previous 5-year) average. We continue to see no evidence of good reproduction when compared to historic data.
- Yellow perch catch declined in 2018 but was 58% higher than the previous 5-year average.
- In 2018, walleye catch was 35% below the previous 10-year average. We anticipate that the population will remain at current levels given strong reproduction in recent years (production of strong year classes).
- Lake sturgeon catches were extremely rare in this assessment prior to 1995; however, at least one lake sturgeon was collected in 18 of the last 24 years, suggesting improved population status. A record high nine lake sturgeon were captured during 2018 netting.

**Sea Lamprey Control**
- The abundance index of adult sea lamprey in 2018 was 11,666, below the target of 15,500.
- Sea lamprey control agents from Fisheries and Oceans Canada, contractors for the Great Lakes Fishery Commission, conducted sea lamprey control treatments in the following NY tributaries in 2018: Sterling Creek, Snake Creek, Catfish Creek, Grindstone Creek, Red Creek, Eightmile Creek, Little Sandy Creek and the Black River.
- NY streams scheduled for sea lamprey treatments in 2019 include: Fish Creek, Owasco Lake Outlet, Scriba Creek, Sterling Creek, and Forest Lawn Creek.
- An additional 55 tributary sections in NY are scheduled for larval sea lamprey assessments in 2019.

**Update on Sportfishing Restoration and Spending Plan for the Lake Ontario System (Natural Resources Damages settlement over release of harmful chemicals)**
- $10.8 million allocated for four project categories: fisheries management enhancement (5), fishing access improvements (22), aquatic habitat restoration (4), and education/outreach/promotion projects (4).
- Approximately $6 million spent to date; $3.7 million obligated for ongoing projects.
- Extensive use of partnerships/cost sharing have greatly enhanced the value of this program.
- Forty-two projects were initially selected, six of which have since been cancelled and funds from those projects transferred to higher ranked projects.
- Project 42 - Construct walkways on existing piers or breakwalls cancelled:
  - $400,000 transferred to Salmon River aquatic habitat enhancement/angler trails
  - $100,000 transferred to pen rearing assistance
- Of the 36 projects currently considered viable, 29 have been completed.
- Recently completed projects include:
  - Four angler access projects associated with the NYS Office of Parks, Recreation and Historic Preservation Niagara River region including:
    - Four Mile Creek angler parking
    - Fort Niagara boat launch and shoreline restoration
    - Shoellkopf Ruins fishing access
    - Artpark fishing access
• Irondequoit Creek aquatic habitat improvements
• Projects underway:
  o Salmon River Hatchery water supply improvements
  o Salmon River aquatic habitat enhancement and angler trails
  o Pen rearing assistance
• Projects in planning stage:
  o Black River walleye habitat enhancement
  o St. Lawrence River wetland enhancements
• A detailed summary will appear in our 2018 annual report in spring 2019.