



July 10, 2023

Chief, Endangered Species Division
National Marine Fisheries Service, F/PR3
1315 East-West Highway
Silver Spring, Maryland 20910

I. **Title:** Application for an Individual Incidental Take Permit under the Endangered Species Act of 1973

II. **Date:** July 10, 2023

III. **Contact Information:** Ruthie Gold, Program Director
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IV. **Species description:** Atlantic sturgeon (*Acipenser oxyrinchus*)

The largest of the sturgeon found in New York, Atlantic sturgeon in the Hudson River can reach over 200 pounds in weight and be six to eight feet in length. Individuals up to 14 feet long and 800 pounds have been recorded in New Brunswick, Canada. The Atlantic sturgeon is olive green to blue-black on its back and upper sides, shading to white on the belly. It can be distinguished from its cousins by its long, narrow snout with a relatively small underslung mouth and four barbels. It also has 5 bony plates called scutes along its body and has one of the longest lifespans of any anadromous fish in North America.

Atlantic sturgeon are anadromous, migrating from saltwater to spawn in freshwater. While much is known about its habits in freshwater, little is known about this sturgeon while at sea. At spawning time, mature male sturgeon move into the river first followed by the females about a month later. Spawning occurs from April-June upstream of the salt front. Individual fish have been known to travel over 900 miles to spawn. Following spawning, adults return to the Atlantic Ocean while juveniles remain in the river for two to six more years before moving out to sea.

In the Hudson River, sturgeon reach sexual maturity between 11 and 21 years of age (farther South, sturgeon populations reach sexual maturity more quickly). Spawning sturgeon scatter the eggs across a wide area. Following hatching, the young fish remain in freshwater for two to six years before moving out to sea. As they grow, they feed on a variety of benthic or bottom organisms, including worms, amphipods, isopods, midge larvae, plants, and small fishes. Atlantic sturgeon are sometimes seen basking at the water's surface and making spectacular

jumps. After returning to sea, Atlantic sturgeon spend the rest of their lives there, except for when they come back to rivers and estuaries to spawn.

In New York, Atlantic sturgeon are generally found in the deeper portions of the Hudson River. While occasionally found as far upriver as Albany, young fish are rarely seen upstream of Hudson. Prior to 1900, Atlantic sturgeon were abundant in the Hudson River estuary, especially south of Hyde Park. People caught large numbers of these huge fish for their delicious meat and for the caviar. Nicknamed "Albany Beef," the once plentiful Atlantic sturgeon was commonplace dining fare in New York's Capital Region. Atlantic sturgeon numbers have dramatically decreased since then. Currently, they are protected and no one is allowed to fish for them.

Based on communication with the NYS DEC, it is estimated that for Atlantic sturgeon, Clearwater is most likely to encounter individuals, mostly sub-adults, 98% of the time from the New York Bight distinct population segment (DPS). Larger individuals would likely be able to avoid the otter trawl that Clearwater uses, because of its small size and slow speed. Research conducted by the DEC and other researchers using side-scan sonar and acoustic telemetry "suggests that the Hudson River holds one of the largest contemporary populations of Atlantic sturgeon, yet the population remains severely depleted relative to virgin conditions." It is estimated that there are around 1,400 Atlantic sturgeon in the Hudson. A small otter trawl like the one employed by Clearwater has very low likelihood of catching a spawning age Atlantic sturgeon because of the small size of the net and slow speed of the towing vessel. Furthermore, the *Clearwater* will not be trawling in known spawning areas between Norrie Point and Hyde Park during spawning season (May through June).

Shortnose sturgeon (*Acipenser brevirostrum*)

The shortnose sturgeon is the smallest sturgeon found in New York. It rarely is longer than 3.5 feet or heavier than 14 pounds. It has a short, blunt, conical snout with four barbels in front of its mouth. Shortnose sturgeon are typically olive-yellow to gray or bluish on the back, and milky white to dark yellow on the belly. Its scutes are pale and contrast with its background.

While much is still not fully understood about the spawning behavior and early life stages of the shortnose sturgeon, we do know that the shortnose sturgeon is semi-anadromous. Each year, between April and May, adult sturgeon migrate up the Hudson River from the mid-Hudson to spawn north of Coxsackie where the water is less brackish and more fresh. Males spawn every other year and females spawn every third year. Eggs hatch in approximately 13 days. The newly-hatched fry drift with the currents along the bottom, as they are not strong swimmers. As they grow and mature, the fish move downriver into the more brackish waters of the lower Hudson.

Like all sturgeon, shortnose sturgeon are long-lived. The oldest known female was 67 years old and the oldest known male was 32. Shortnose sturgeon eat sludge worms, aquatic insect larvae, plants, snails, shrimp, and crayfish, using their barbels to locate food. Their range encompasses the Atlantic seaboard in North America. The shortnose sturgeon is restricted in range to estuaries and large coastal rivers of the Atlantic seaboard in North America. In New York State, it is found in the lower portion of the Hudson River from the southern tip of Manhattan upriver to the Federal Dam at Troy.

The shortnose sturgeon is officially listed as endangered in all states where it occurs. It is unlawful to kill or possess this fish. Pollution in the 1800s and early 1900s led to major oxygen depletion and subsequent high fish losses. Dam construction also cut off upstream breeding grounds. Lastly, demands for sturgeon meat and caviar, as well as dredging in sturgeon habitat contributed to the decrease in shortnose sturgeon populations. Management measures taken by the DEC have resulted in a recovering shortnose sturgeon population in the Hudson River, though the species is still considered to be endangered.

V. Detailed description of proposed activity:

Overview: Clearwater is an environmental education organization that owns and operates a 106 ft. historic tall ship, the sloop *Clearwater*. The *Clearwater* is a replica of cargo vessels that sailed the Hudson River in the 18th and 19th centuries.

Our programs routinely reach thousands of people each year. For many students, the Hudson estuary is nothing more than a strip of brown water they cross when traveling over a bridge. Many believe the river is so polluted that it can't harbor any life and, as a result, it is not worth working to protect it. We use the sloop as a platform to reframe that narrative. We teach students (who can range from 4th graders from Harlem to Fulbright students from all over the world) about the ecology and history of the Hudson River through hands-on, interactive learning stations, as well as full group activities, like raising our sail and going fishing.

We are applying for this incidental take permit in order to use a small otter trawl as part of our program. This is not a research project. The trawl is used as an educational experience for students to sample Hudson River fish and invertebrates. The students participate in setting and hauling in the net. Only a very few individual fish and invertebrates are kept onboard in an aquarium for the duration of the three-hour program. The rest are immediately returned to the river. The trawl is a useful, participatory tool in exposing students and the public to the diversity of life in the Hudson estuary. Our other primary tool for sampling is a beach seine, which is used in our Tideline shoreside programming.

Clearwater has created sampling protocols designed to minimize the already low likelihood of catching a sturgeon with our trawl. This protocol includes limiting net sets to 5 minutes each. A set is defined as the time when the doors reach the water's surface to the time when they are retrieved. Each set is logged in detail by the captain onboard. Each set is limited to less than 2-3 knots vessel speed (less than 4 mph). If a sturgeon of either species is caught, our education staff will immediately release the fish back into the river without delay.

Because the trawl is so small, the sets are short in duration, and the floor of the river where we sample is detritus-covered mud, we anticipate that this is a low-impact activity. We limit use of the trawl to areas where no other options for obtaining fish and invertebrate samples exist and avoid known sturgeon gathering areas. For example, we do not set the trawl in known spawning areas between Norrie Point and Hyde Park during spawning season (May through June).

After reviewing species lists provided by the NMFS, we do not anticipate encountering any other NMFS species of concern with our sampling protocol. This permit application would be specific to the two species of sturgeon listed above.

VI. The anticipated dates, duration and the specific location of the activity:

A. Activity dates: Our sailing season runs from early April through the beginning of November and we expect to use the otter trawl net between April 1st and November 5th. We are requesting a 10 year permit to be valid from 2024 to 2035. The trawling activity will include one to two sets per day, depending on conditions. No more than a maximum of 10 sets in any given week per vessel during our active sailing season will be taken. Most weeks would feature between 6-8 sets.

B. Duration: The proposed activity involves the use of a small otter trawl net as part of an environmental education program on the Hudson River estuary. This program reaches thousands of students as well as members of the general public each year. This activity will involve using the net once or twice a day as needed, for 5 minute intervals, with the vessel speed around 2 knots, to sample Hudson River life. Most sets take place between 20 and 40 feet of water depth. Trawling will be scheduled to take place onboard the sloop *Clearwater* only. The vast majority of individual fish that are caught will be immediately returned to the river after, with only a select few saved in aquaria for brief display to school groups on board the vessels before being returned. Trawling in general will commence at approximately 9:30AM and 1:00 PM on a given day, based on our program schedule. As stated previously, a maximum number of 10 sets a week would be employed, and during many weeks the number of sets would likely run from 6-8 per week.

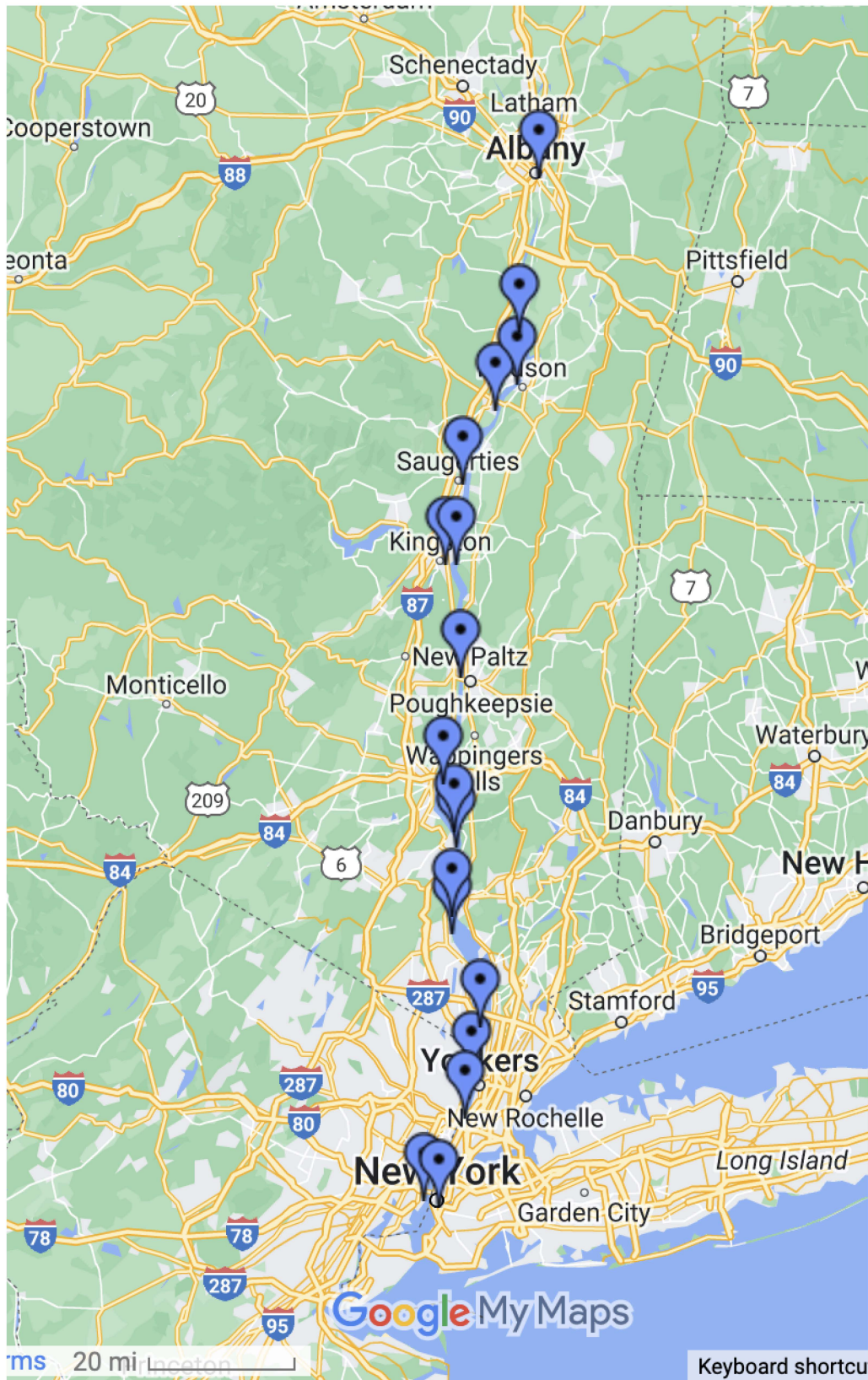
C. Location: The *Clearwater* sails and runs programs throughout the Hudson River estuary from various locations between Albany, NY south to New York Harbor depending on the demand for programs at specific docks. The specific scheduled locations for trawling sets are based on *Clearwater's* sailing schedule.

A list of docks where *Clearwater* will employ trawling is included here with links to Google maps of their specific location:

Dock Name	River Mile	Link to Google Map	Coordinates	*Gear	Dock Authority
One15 Brooklyn Marina, NY	1	Brooklyn	N 40° 41.9123' W 74° 0.2714'	Trawl only	One15 Marina Club
Liberty Landing, NJ	1	New Jersey	40° 42' 37.72", -74° 2' 38.25"	Trawl only	Suntex
Dyckman Marina, NY	10	Manhattan	40.8689° N, 73.9319° W	Trawl only	NYC Office of Parks
Alpine, NJ	15.5	Alpine	40.968149°N 73.91715	Trawl & Seine	Ary Bouskila

Piermont, NY	25.4	Piermont	41°2'26"N 73°55'8"W	Trawl & Seine	Village of Piermont
Haverstraw, NY	36	Haverstraw	41°12'17"N 73°59'26"W	Trawl only	West Haverstraw Marina
Verplanck, NY	42	Verplanck	41°15'11"N 73°57'35"W	Trawl & Seine	King's Marine
West Point, NY	52	WP	41°22'N 74°03'W	Trawl only	US Military Academy
Cold Spring, NY	55	CS	41°25'8"N 73°57'16"W	Trawl only	Village of Cold Spring
Beacon, NY	61	Beacon	41°30'15"N 73°57'56"W	Trawl & Seine	Village of Beacon
Poughkeepsie, NY	75	Poughkeepsie	41°42'N 73°55'W	Trawl & Seine	City of Poughkeepsie
Kingston, NY	90	Kingston	41°55'30"N 74°0'00"W	Trawl only	Hudson River Maritime Museum
Rhinecliff, NY	90	Rhinebeck	41° 55' 5.99" N -73° 57' 2.39" W	Trawl only	Hudson River Maritime Museum
Saugerties, NY	102	Saugerties	42.069937589 N, -73.9392496761 W	Trawl only	Casey and Connor Currey
Catskill, NY	112	Catskill	42°13'16"N 73°51'59"W	Trawl only	City of Catskill
Hudson, NY	117	Hudson	42°15'0"N 73°47'23"W	Trawl only	City of Hudson
Coxsackie, NY	125	Coxsackie	42°21'27"N 73°48'29"W	Trawl only	Village of Coxsackie
Rensselaer, NY	145	Rens	42°38'48"N 73°44'01"W	Trawl only	City of Rensselaer

*Beach seine use is available only during low tide conditions at these docks.



D. Important seasonal issues: The biggest seasonal issue is spawning. In order to avoid catching sturgeon, we do not set the trawl in known spawning areas between Norrie Point and Hyde Park during spawning season (May through June).

VII. Conservation Plan:

A. Species impact - Trawling, even with small gear, slow speeds, and short sets, does allow for the possibility of catching a sturgeon of either species. Our estimated catch of sturgeon using our otter trawl for our previous permit was 2 individual sturgeons (either shortnosed or Atlantic) per sailing season. This figure was derived from field data sheets from historical use of the trawl by *Clearwater* and, at the time, our leased vessel at the time, the schooner *Mystic Whaler*. Over the last 10 years, this is the number of sturgeon we have incidentally caught in our trawl net. No take was lethal.

2014 - 0

2015 - 1 (Atlantic sturgeon)

2016 - 0

2017 - 0

2018 - 1 (Atlantic sturgeon)

2019 - 0

2020 - 0

2021 - 0

2022 - 0

Since we are taking active steps to limit the scope of our trawling (actively avoiding known sturgeon zones; slow vessel speeds, and shortened set times) we anticipate that we can continue to maintain our sturgeon encounters at near zero.

Nevertheless, anytime a trawl is set there is potential to catch a sturgeon and some potential for mortality does exist, mostly for juveniles, from impingement in the net. Over the 10-year term of this permit, *Clearwater* anticipates a possible mortality (or lethal take) of up to 1 individual sturgeon. All steps will be taken to avoid known sturgeon gathering areas and to minimize sturgeon injury and mortality if by chance one is captured in the net. Any sturgeon incidentally caught in the trawl net would be immediately released back to the river.

B. Habitat impact- Trawling is an invasive process, especially the use of large scale commercial trawls. The National Science Center in 2002 stated in general, trawling (1) reduces habitat complexity, (2) alters benthic communities, (3) reduces benthic productivity, and (4) most strongly affects fauna that live in regimes of low natural disturbance, especially soft-bodied, erect, sessile organisms inhabiting stable deep seafloors. (NRC, 2002. *Effects of Trawling and Dredging on Seafloor Habitat*. National Academy Press, Washington D.C. 126 pp.). Intensive commercial trawling can result in changes to biodiversity and habitats and favor opportunistic species over slow moving or sessile species. Most existing research on trawling impacts involves impacts on sensitive sea beds under intensive commercial fishing pressure with large gear. Much of the research on trawling impact involves the tracking of the heavy otter boards, which on the standard Engel 145 Otter Trawl weigh 1250 lbs.

The Hudson River, however, is currently under no commercial fishing pressure, and the use of trawls of any kind is limited to educational or research sampling. Clearwater's trawl is a small fraction of the size of even standard research trawls, with otter boards weighing less than 20 lbs. Additionally, the Hudson River benthic habitat impacted by the trawl consists of mud covered with leaf litter and other detritus. Therefore, the trawling that Clearwater engages in is and will continue to be minimally disruptive to Atlantic and shortnose sturgeon habitat.

C. Impact mitigation- The otter trawl net to be used for this project has two otter boards (doors) that are 36" by 18" long and each weighs less than 20 lbs. The net itself includes a soft inner liner at the cod end to help protect the fish. The net's small size (16 ft. long, approx 8 ft. mouth diameter) and the short duration the net is set (5 minutes) lessens the impact on a resilient river bottom habitat that consists mostly of debris-covered mud.

We believe that with some simple protocols, we can significantly reduce the probability of catching any sturgeon. In order to minimize trawl impacts and the likelihood of incidentally catching sturgeon, limiting the number of sets, the length of sets and avoiding known sturgeon areas will be implemented. Clearwater will avoid setting this net in areas of sensitive habitat and in areas known by the NYSDEC to be sturgeon gathering areas and spawning grounds. Clearwater will regularly communicate with DEC fisheries officials to coordinate this activity, and make use of information from the DEC benthic mapping project to avoid sensitive areas. (<https://www.dec.ny.gov/lands/87303.html>). Sturgeon are known to make nests from gravel beds. Knowing where gravel beds are located will allow us to avoid these critical areas.

D. Alternative actions- Clearwater will maintain a License to Collect or Possess through NYSDEC and comply with all the reporting requirements under that special license. This includes logging all species collected under the license and submitting a report annually to NYSDEC. Clearwater will keep a detailed log of our use of the trawl will and submit incident reports should a sturgeon of either species be caught as per NMFS requirements.

Limited use of the trawl will allow Clearwater to sample such common river species such as channel catfish, brown bullheads, American eels, white perch, and hogchokers. Students use custom-designed Hudson River dichotomous keys to identify the fish. These fish would not otherwise be accessible to the thousands of students that participate in our education program each year.

E. Sources:

<https://www.fisheries.noaa.gov/species/atlantic-sturgeon>

<https://www.fisheries.noaa.gov/species/shortnose-sturgeon>

<https://www.dec.ny.gov/animals/37121.html>

<https://www.dec.ny.gov/animals/26012.html>

Effects of Trawling and Dredging on Seafloor Habitat. National Academy Press, Washington D.C. 126 pp.

<https://www.dec.ny.gov/lands/87303.html>

We also have some contacts at the NYSDEC who have been tremendous sources of information. In preparing this plan, we consulted with Chris Bowser, Education Coordinator for the Hudson River Estuary Program and Hudson River National Estuarine Research Reserve. For our

previous application for our current permit, our primary source for current Hudson River sturgeon information was Kathy Hattala, Fisheries Biologist, Hudson River Fisheries Unit NYSDEC Bureau of Marine Resources. Clearwater can rely on both Mr. Bowser and Ms. Hattala to respond to sturgeon-related questions that come up both during our sailing season, as well as in the off-season.

In summary, Clearwater is requesting a 10-year incidental take permit to begin in 2024 that will be valid between April 1st and November 5th that will allow limited use of a small otter trawl as part of a Hudson River shipboard education program. We request the same terms as our current permit: “A total of 10 sturgeon (any combination of Atlantic and shortnose sturgeon) over the duration of the 10 year permit, of which up to four sturgeon (any combination of Atlantic and shortnose sturgeon) may be taken in any year. Of the 10 authorized takes, one may be lethal, over the duration of the 10 year permit.”

We will not use the trawl in known sturgeon spawning habitat and make every reasonable effort to avoid catching any sturgeon. We will limit the duration to the trawl sets to 5 minutes. If a sturgeon of either species is caught, it will be immediately released with a minimum of handling following protocols outlined by the NMFS.