

Fish Survey Report 2019



Purpose

Hudson River Park conducts an annual fish survey to monitor local fish population dynamics and connect our community to the River. This fish survey is being combined with The River Project's survey at Pier 25 to inform our understanding of fish diversity and abundance at five pier locations within the Park. By tracking fish diversity over time, we can see broad changes within population dynamics and within specific species— for example the average size of fishes— and infer how seasonal changes or major events, like storms, effect local fishes.

Key Questions

- What type of fish are present at Hudson River Park's Pier 25, Pier 40, Pier 46, Pier 51 and Pier 84?
- How do fish populations vary from year to year?

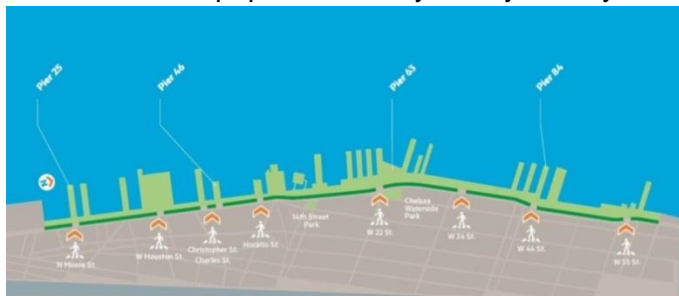


Fig. 1 (above) | Map of survey sites. All locations hosted school/camp programs; Pier 25 and Pier 84 also hosted Big City Fishing. In 2019, more than 5,500 people participated in Big City Fishing alone.



Fig. 2 (above) | Two anglers during Big City Fishing on Pier 25.

Methods

- HRP's fish survey is conducted annually with year-round trap checking at Pier 25 and rod & reel fishing from April to November at various locations (Fig. 1)
- Participants in school/camp field trips and public programs are trained in catch and release fishing techniques, i.e. drop-line casting, species identification
- Groups of up to 15 anglers at a time fish for approximately 20-minute sessions
- Park educators remove caught fish from de-barbed hook, placed in holding tank, and recorded data (date, time, location, species, size (cm/inches))
- Data analyzed with Excel.

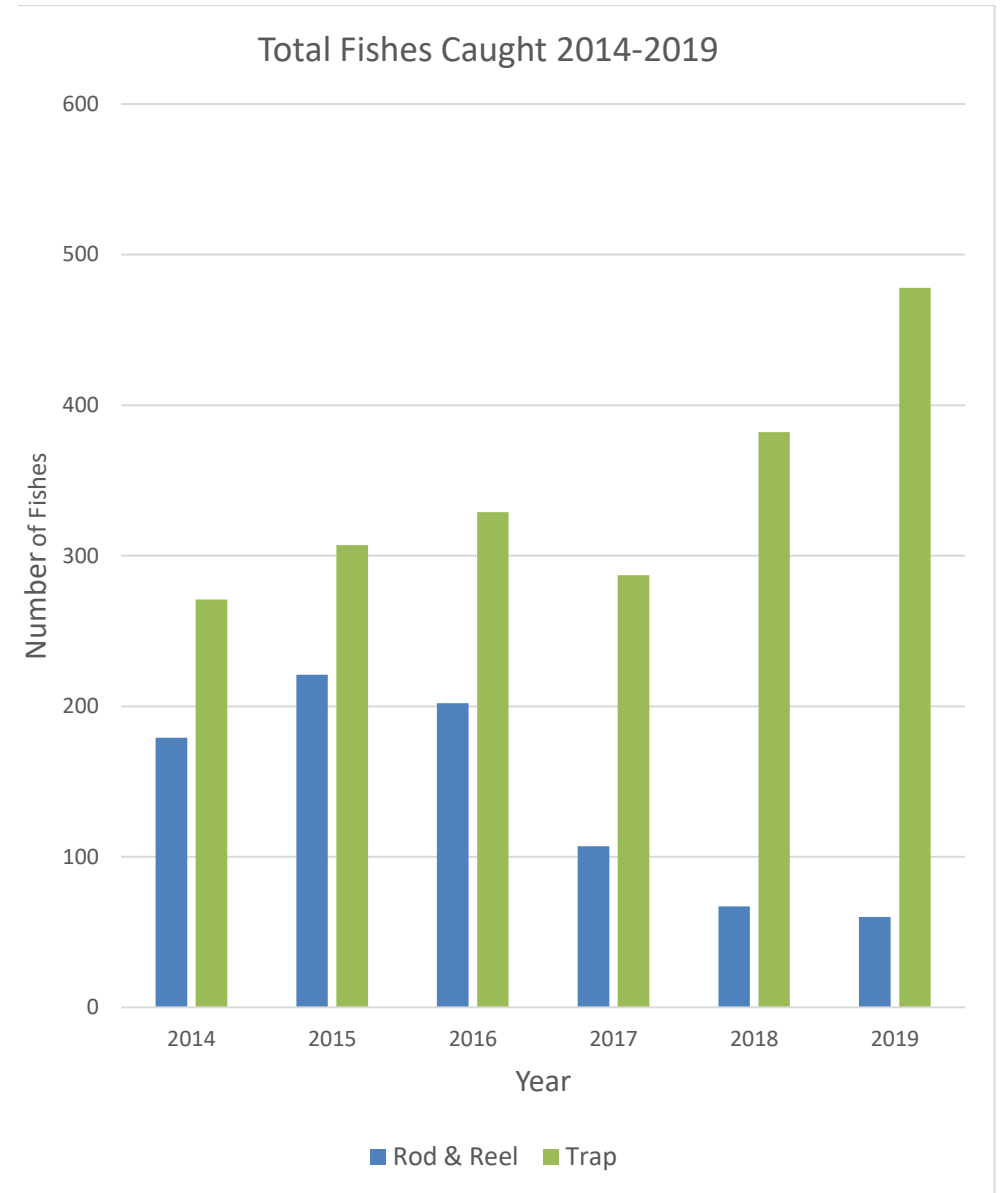
Major Findings

Over the past six years, the Park has observed a decrease in the number of fish caught via rod & reel, which correlates with hosting fewer fishing programs in recent years as HRPK diversified STEM program offerings. A significant increase in the number of fish caught via trapping has also been observed (Fig. 4) despite no change in trapping methodology, while the number of species observed over the same time period has not changed significantly, averaging ~17 species.



Fig. 3 (above) | Striped Bass in holding tank during Big City Fishing

Fig. 4 (right) | Total fishes caught by all methods, 2014-2019.



On rods, the most fishes were caught in August. June and September only saw 3 fish each. Though the reasoning for this is undetermined, it is possible cooler water temperatures in these months compared to previous years influenced this trend, as well as reduced presence of many diadromous species during these months.

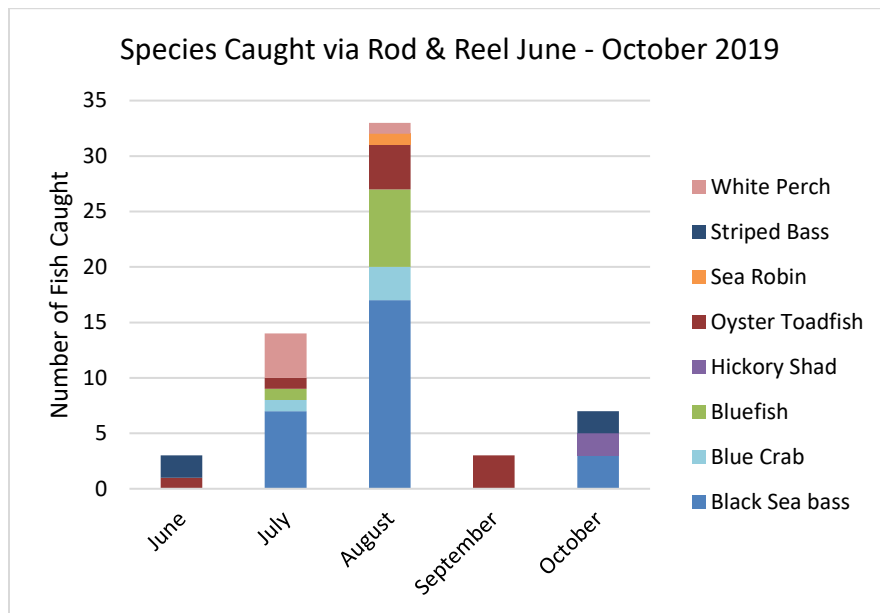


Fig. 5 (above) | Fishes caught in 2019 between June and October via rod & reel

- The greatest number of species (6) were caught in August.
- The greatest number of individuals (33) were caught in August.

In the traps, the most fishes were caught in September, with August a close second. Part of the dramatic raw abundance discrepancy between rods and traps is due to the robust population of benthic fishes like toadfish and blackfish that are more likely to be caught with the latter method. Blue crabs omitted from below figure due to overwhelming ($n > 700$) abundance.

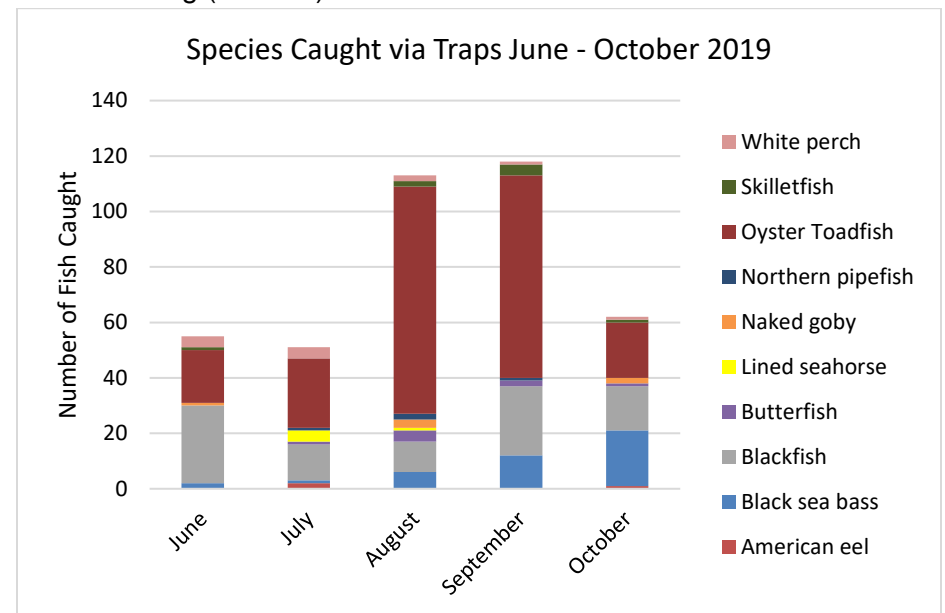


Fig. 6 (above) | Fishes Caught in 2019 between June and October via trapping

- The greatest number of species (10) were caught in August and October.
- Three additional fish species caught are omitted due to low ($n < 3$) abundance.

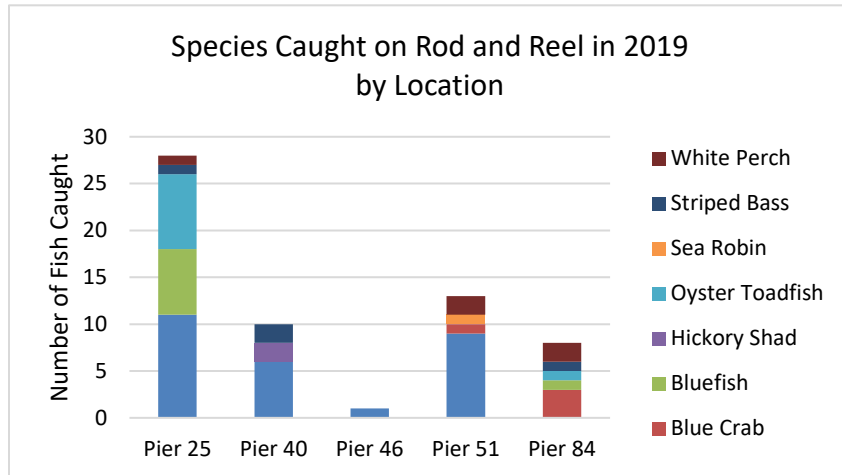


Fig. 7 (above) | Fishes Caught in 2019 via rod & reel by location

- The greatest number of individuals (28).
- The greatest number of species (5) were caught at Pier 25 and Pier 84.
- The fewest individuals and species (1) were caught at pier 46.

The most fishes were caught at Pier 25 where the Park hosted 22 programs with more than 3,000 participants, and the fewest were caught at Pier 46 where only 7 programs were hosted with 220 participants. The species that was most commonly caught in via rod was the Black Sea Bass (27), and Oyster Toadfish was the second (9). Two Hickory Shads were caught on rod and reel; these were the Park's first Hickory Shad catches ever!



Fig. 8 | White perch in holding tank (above); Silverside and seahorse in Wetlab Aquarium (below)



Take Aways

From year to year, the Park consistently catches bluefish, striped bass, oyster toadfish, blackfish, black sea bass, and white perch. American eels, lined seahorses, Northern pipefish, and skiltefish make up some of the Park's less numerous yet consistent residents. It is possible that the most fish were caught in August/September due to high water temperatures during these months.

There is not enough information to determine why some species were not as represented in the 2019 survey as they were in previous years. Seeing fewer of a single species overtime, like with the American Eel or Summer Flounder does not necessarily mean there are fewer in the river. There appear to be many, irregular abundance fluctuations across many species.



Fig. 7 (above) | Park educators and anglers during Big City Fishing at Pier 51



Fig. 8 (above) | Bluefish and Oyster Toadfish in holding tank at Big City Fishing

Future Directions

Moving forward, the Park will continue to collect data about the fishes in the estuarine sanctuary at all catch and release fishing programs. The Park also plans to expand its survey methods. We have started sampling for environmental DNA (eDNA), a method by which researchers can survey the presence of fishes by sequencing DNA from water samples. This can show fish species we don't see with rod & reel. Additionally, the Park partnered with The River Project, which has been surveying the Hudson's inhabitants for over 30 years! With the combination public fishing events and surveying our many fish traps and eel mops, future datasets will be a more accurate representation of what's living in the Hudson.