

Delaware Estuary

Bucks, Delaware, and Philadelphia Counties

2020 Striped Bass Survey



Area 6 Fisheries Biologist Tyler Grabowski holding a large, female Striped Bass

The Pennsylvania Fish and Boat Commission (PFBC) assessed the Striped Bass spawning stock in the Delaware Estuary between May 11 and June 3, 2020. Annually, PFBC staff conducts adult Striped Bass sampling at 21 index sites between the mouth of Rancocas Creek, NJ (river mile 109) downriver to the mouth of Raccoon Creek, NJ (river mile 80) (Figure 1). Each of the 21 sites were sampled twice using boat electrofishing (42 total samples). Additional collection efforts (beyond the 21 historical sites) were conducted at Trenton Falls near the head-of-tide to capture larger Striped Bass (≥ 16 inches) for tagging purposes.



Figure 1. Map of the 21 index sites sampled between Rancocas Creek (RM 109.76) and Raccoon Creek (RM 80.66) on the Delaware Estuary between May 11 and May 28, 2020. Base map adapted from the Delaware River Basin Commission.

A total of 195 fish were captured at the 42 index sites in 2020. Males accounted for 74% of the total catch and ranged from 6 to 34 inches in length, while females accounted for 13% of the total catch and ranged from 23 to 43 inches in length. The remaining 13% of the total catch was comprised of fish of unknown sex. Sex could not be determined for these fish because they were small, sexually immature juveniles or larger fish that were not “running ripe” (actively flowing eggs or milt) at the time of capture. Those fish ranged from 8 to 25 inches in length. The total catch rate (12.5 fish/hr), catch \geq 12 inches (9.6 fish/hr), and catch \geq 28 inches (1.0 fish/hr) of Striped Bass during the 2020 survey were lower than long-term averages (Figure 2).

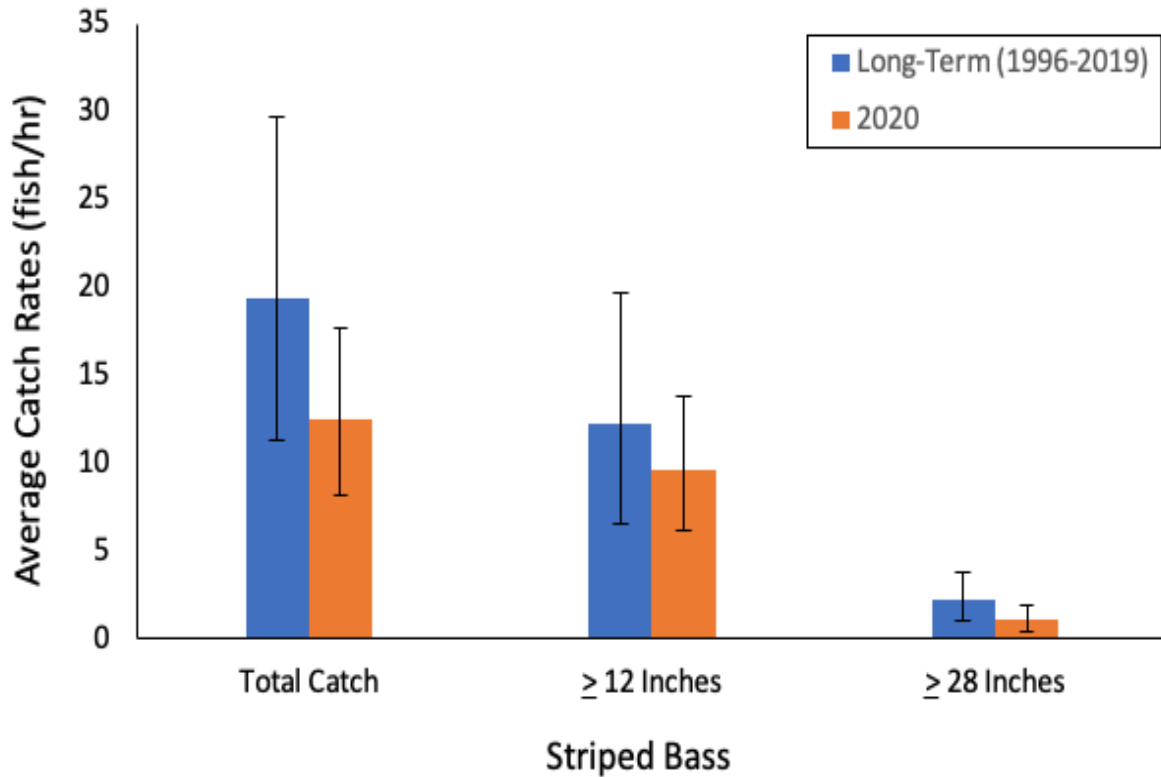


Figure 2. Electrofishing catch rates for Striped Bass captured in the Delaware Estuary between May 11 and 28, 2020 compared to corresponding long-term averages (1996 to 2019). Vertical black bars depict the 95% confidence intervals.

The total catch rate of Striped Bass from the 2020 survey represents the fifth lowest on record since monitoring began in 1996. Further, the catch rate of Striped Bass ≥ 28 inches was the lowest recorded over the time series. The catch rates of these larger fish have been declining for several years (Figure 3), which resulted in regulatory actions being taken by the [Atlantic States Marine Fisheries Commission in the fall of 2019](#) to reduce fishing mortality of the coastwide Striped Bass stock. Striped Bass of larger sizes (≥ 28 inches) and particularly those exceeding 35 inches, are generally mature females. Therefore, limiting harvest of these fish is important for rebuilding the female spawning stock biomass (SSB) back to the biological reference point and ending the current trend of overfishing.

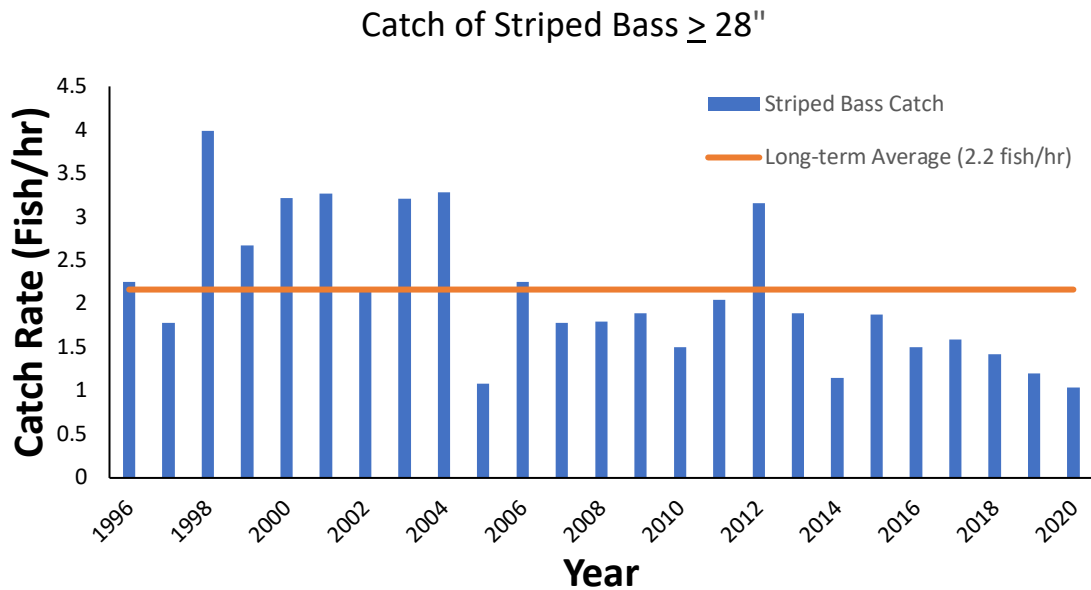


Figure 3. Catch rate of Striped Bass greater than 28 inches collected during the Striped Bass Spawning Stock Survey (1996-2020).

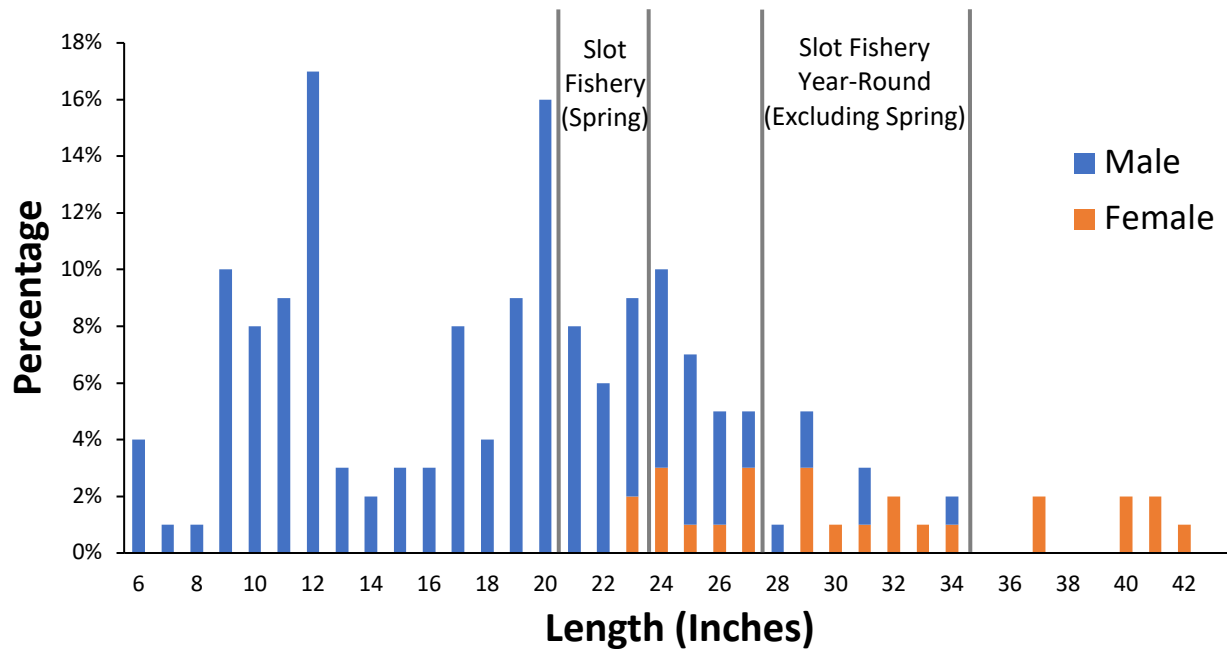
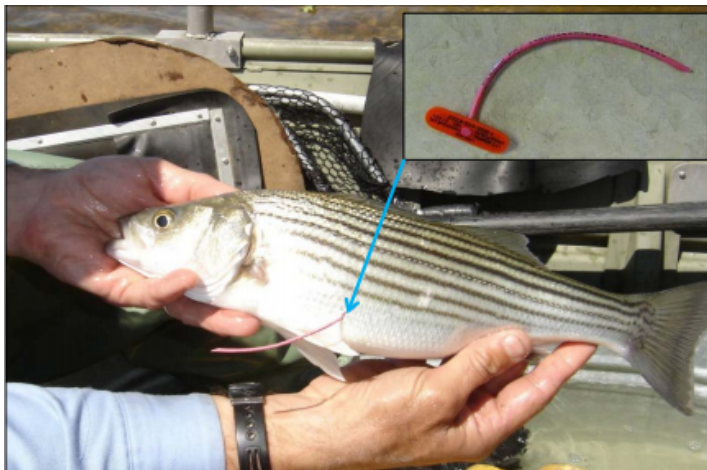


Figure 4. Length-Frequency distribution of Striped Bass collected during the 2020 Striped Bass Spawning Stock Survey by Sex.

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A large proportion (42%) of the total catch in 2020 was comprised of fish ranging from 17 to 24 inches (Figure 4). Fish in these sizes classes are the result of strong year classes produced in 2014 and 2015, which are currently of sizes (or soon to recruit to sizes) permitted for harvest under Pennsylvania's modified conservation equivalency spring slot regulation (two fish from 21 inches to less than 24 inches).

A total of 196 Striped Bass ≥ 16 inches in length were tagged with a pink colored U.S. Fish and Wildlife Service reward tag in 2020 (see photo), as part of a multi-state, coastwide effort. Information gathered from tagging programs is dependent on angler reports. Tag reports allow fisheries biologists to monitor coastal movement patterns, determine where fish are harvested, estimate annual fishing mortality, and document angler release rates.



Note the three-inch, pink, spaghetti-like tag near the tip of the left pectoral fin. Please report reward tags to the U.S. Fish and Wildlife Service by calling 1-800-448-8322.

Between 1995 and 2020, the PFBC tagged a total of 5,670 Striped Bass in the Delaware Estuary. As of January 19, 2021, 16% of the 5,670 tagged fish were reported as caught. Recreational and commercial fishermen accounted for 89% and 7% of the tagged fish caught, respectively, while 4% were credited to other collectors, such as scientific researchers. Fish tagged by the PFBC have been caught from Maine to North Carolina. However, a large portion of these tagged fish were caught by anglers within the Delaware Bay (or in tributaries to the bay) and in the Atlantic Ocean off the coast of New Jersey (Figure 5). Of the reported tags, 51% were caught and released; 47% were harvested; and 2% were found dead, dying, or

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captured while doing scientific research. Recreational and commercial fishermen harvested 46% and 77% of their Striped Bass catches, respectively. The ratio of female to male Striped Bass in the harvest was 1.5:1, indicating more harvest pressure on the female segment of the population. However, this ratio was likely influenced by the large number of tagged males that were too small to be legally harvested.

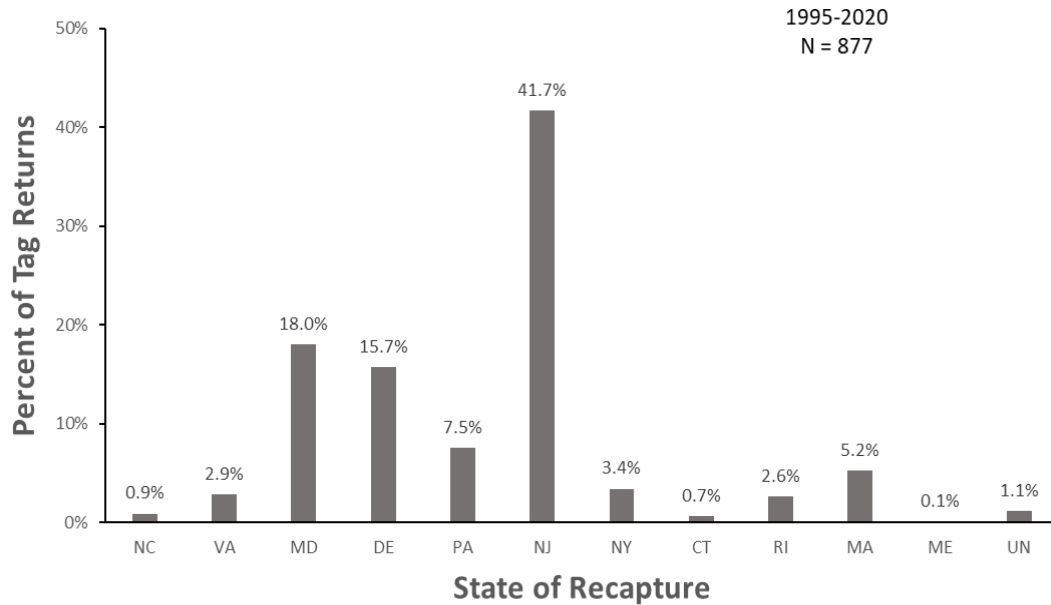


Figure 5. Percent of tag returns by state of recapture for Striped Bass tagged by the Pennsylvania Fish and Boat Commission in the Delaware Estuary between 1995 and 2020. UN = unknown recapture location.

NEW STRIPED BASS FISHING REGULATIONS FOR 2020

In 2020, The Pennsylvania Fish and Boat Commission, in accordance with the Atlantic States Marine Fisheries Commission, took regulatory action to assist in decreasing the overfishing of Striped Bass that is currently occurring coastwide. Two changes to length limits were made: 1. Decrease the Spring Slot limit's maximum length limit from 25 inches to 24 inches. The regulation now permits the harvest of two fish from 21 inches to less than 24 inches during the April/May slot fishery in the Estuary, and 2. Added a maximum length limit to protect large, female Striped Bass. The previous regulation (2019 and prior) allowed harvest of one fish greater than 28 inches; however, the new regulation (implemented in 2020) permits harvest of one fish greater than 28 inches but less than 35 inches (Table 1). Additionally, a

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regulation mandating the use of in-line (non-offset) circle hooks (Figure 6) when fishing with bait, both live or dead, regardless of species targeted, is now required in the Delaware Estuary (Below the Calhoun Street Bridge) and is recommended for those fishing the river proper (Above the Calhoun Street Bridge). This regulation is intended to decrease fishing morality associated with catch-and-release angling. Anglers unfamiliar with the use of circle hooks should understand their design requires the angler let the fish hook itself. In general, this results in a fish that is hooked in the corner of the mouth. However, this technique is different than the more traditional use of a J-style hook that requires a hook set. Circle hook-caught fish are typically easier to unhook and experience less handling stress, whereas J-style hooks may be swallowed by the fish and result in increased stress and potentially greater recreational release mortality.

Table 1. [Regulations for the Striped Bass fishery](#) in the Delaware River and Estuary, including tributaries from the mouths of the tributaries upstream to the limit of tidal influence. Note the upper slot numbers of 24 and 35 inches are not inclusive, meaning it is illegal to harvest fish ≥ 24 or ≥ 35 inches for each respective slot length limit.

Location	Length Limit	Bag Limits	Other	Open Season
Pennsylvania Delaware Estuary <i>PA/DE state line upriver to Calhoun St. Bridge at Morrisville, PA (56 river-miles)</i>	21" to less than 24"	2	In-line (non-offset) circle hooks required when fishing with bait	4/1 - 5/31
	28" to less than 35"	1	In-line (non-offset) circle hooks required when fishing with bait	1/1 - 3/31, 6/1 - 12/31
Pennsylvania Delaware River (non-tidal) <i>Calhoun St. Bridge upriver (196 river-miles)</i>	28" to less than 35"	1	In-line (non-offset) circle hooks recommended when fishing with bait	1/1-12/31

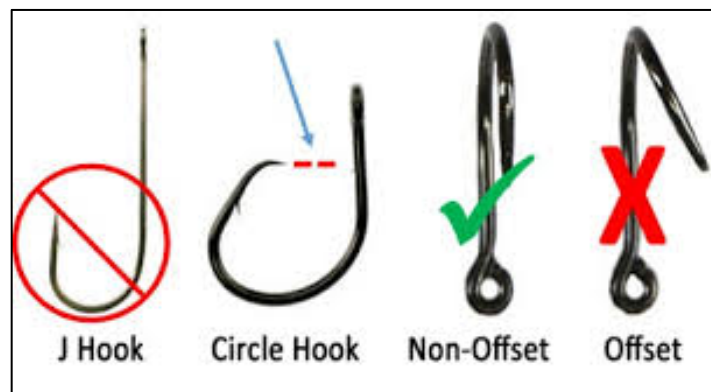


Figure 6. Approved in-line (Non-offset) hook type for use in the Delaware Estuary

*Image courtesy of the Virginia Marine Resources Commission

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Anglers are advised that New Jersey regulations apply if they cross the PA/NJ boundary line, which is delineated as the approximate middle of the channel. Also, in addition to possessing a valid Pennsylvania fishing license, anglers targeting Striped Bass in the Delaware River and Estuary below Trenton Falls are required to register through the [PFBC's free on-line Saltwater Angler Registry](#). Likewise, if fishing across the state line in New Jersey, Pennsylvania anglers must also register in the free [New Jersey Saltwater Recreational Registry Program](#).

Anglers wishing to consume Striped Bass are advised to consult the [fish consumption advisory information](#) provided in the rear of the [Pennsylvania Fishing Summary Booklet](#). There is currently a one meal per month advisory for Striped Bass 28 inches to less than 35 inches in length. Slot size Striped Bass (21 to less than 24 inches in length) are now covered by the general statewide advisory for recreationally caught sportfish of one meal per week.

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