

Delaware Estuary

Bucks, Delaware, and Philadelphia counties

2023 Striped Bass Survey



Area 6 Fisheries Biologist Tyler Grabowski holding an adult Striped Bass collected in 2023.

The Pennsylvania Fish and Boat Commission (PFBC) assessed the Striped Bass spawning stock in the Delaware Estuary between May 8 and May 22, 2023. 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). However, access was limited at two sites again in 2023, therefore sampling was conducted at 19 sites. Established protocols were followed at the 19 sites and each site was sampled twice using boat electrofishing (38 total samples). Additional collection efforts (beyond the 19 historical sites) were conducted at Trenton Falls near the head-of-tide to capture larger Striped Bass (≥ 16 in) for tagging purposes. Several sites between Bristol and Croydon, PA were also investigated to determine if spawning activity is occurring further upriver than the current established

Pennsylvania Fish & Boat Commission Biologist Report

sampling locations. These sites will be revisited in 2024 due to their potential utility in long-term monitoring based on results in 2023.

A total of 208 fish were captured at the 38 index sites in 2023. Males accounted for 70% of the total catch and ranged from 8 to 34 in, while females accounted for 17% of the total catch and ranged from 20 to 49 in (Figure 2). 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 5 to 25 in.

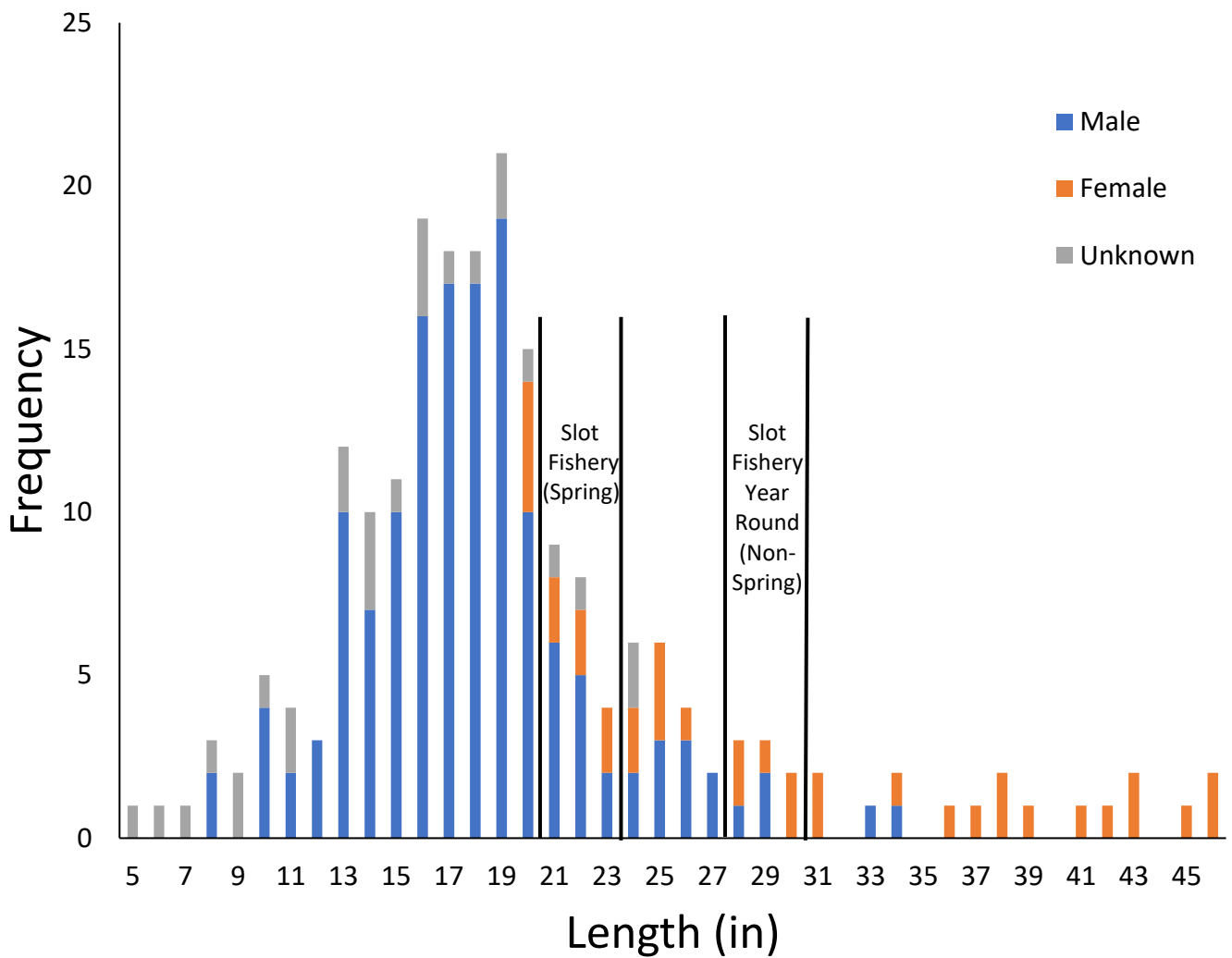


Figure 2. Length-frequency distribution of Striped Bass collected during the 2023 Striped Bass Spawning Stock Survey by Sex. Black vertical bars denote havestable fish ranges during their respective seasons.

Pennsylvania Fish & Boat Commission Biologist Report

The total catch rate (13.95 fish/h) and catch ≥ 28 inches (1.48 fish/h) of Striped Bass during the 2023 survey were lower than long-term averages (Figure 3). The catch ≥ 12 inches (12.8 fish/h) was slightly higher than the long-term mean, primarily due to the strong year classes from 2015 and 2018 that make up a majority of this catch metric. The total catch rate of Striped Bass from the 2023 survey represents the eighth lowest catch rate on record since monitoring began in 1996. Further, the catch rate of Striped Bass ≥ 28 inches was the ninth lowest catch rate recorded over the time series (Figure 4).

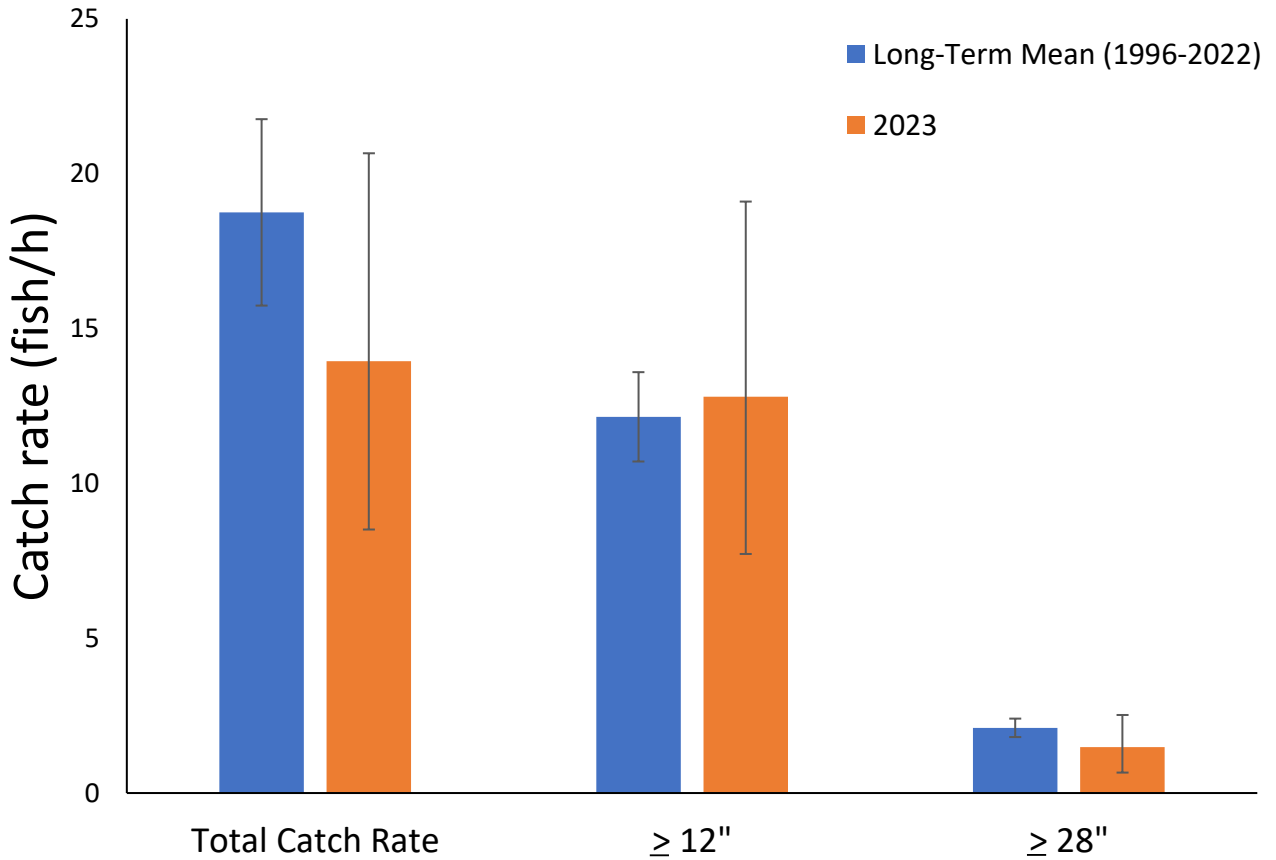


Figure 3. Electrofishing catch rates for Striped Bass captured in the Delaware Estuary between May 8 and 16, 2023 compared to corresponding long-term averages (1996 to 2022). Black error bars depict the 95% confidence intervals.

Pennsylvania Fish & Boat Commission Biologist Report

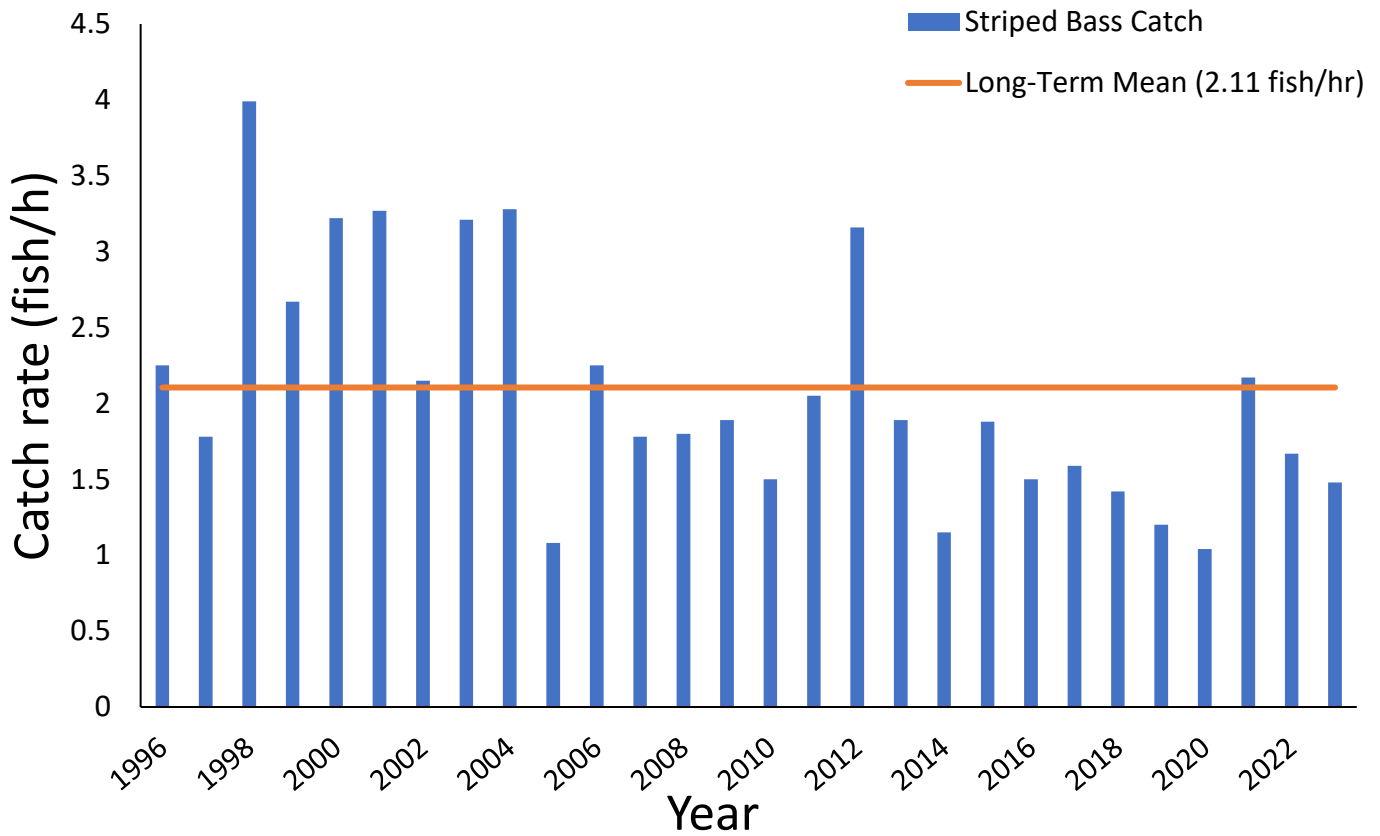
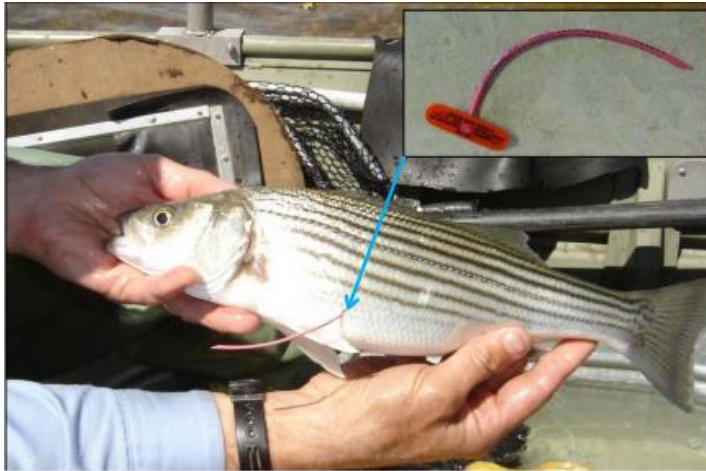


Figure 4. Catch rate (fish/h) of Striped Bass greater than 28 inches collected during the Striped Bass Spawning Stock Survey (1996-2023).

The status of the Striped Bass stock continues to decline, as evidenced by the most recent data collected in Pennsylvania (and coastwide), in 2023. Furthermore, reproduction and recruitment also continue to remain at levels below long-term values. Finally, results from the Marine Recreational Intercept Program (MRIP) found recreational fishing mortality was exceptionally high in 2022, which primarily affected the strong 2015-year class. Given these results, it was determined that if fishing mortality remained at these levels moving forward, it would be improbable to rebuild the stock by the 2029 deadline. Therefore, in early 2023, the Atlantic States Marine Fisheries Commission Striped Bass Management Board recognized that Emergency Action was needed. This action resulted in the shrinking of the coastwide slot from 28 to less than 35 in to 28 to less than 31 in. Moving forward into 2024 and beyond, [Addendum II](#), which builds on the Emergency Action, will take effect by May 1, in the hopes of decreasing fishing mortality levels to sustainable levels.

Pennsylvania Fish & Boat Commission Biologist Report



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.

In addition to monitoring abundance, a total of 227 Striped Bass \geq 16 inches in length were also tagged with a pink colored U.S. Fish and Wildlife Service (USFWS) reward tag in 2023 (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.

Between 1995 and 2023, the PFBC tagged a total of 6,344 Striped Bass in the Delaware Estuary. As of January 10, 2024, 15% of the 6,344 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. Of the reported tags, 52% were caught and released; 46% were harvested; and 2% were found dead, dying, or captured while doing scientific research. Recreational and commercial fishermen harvested 45% and 79% 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. Fish tagged by the PFBC have been caught from Maine to North Carolina. 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).

Pennsylvania Fish & Boat Commission Biologist Report

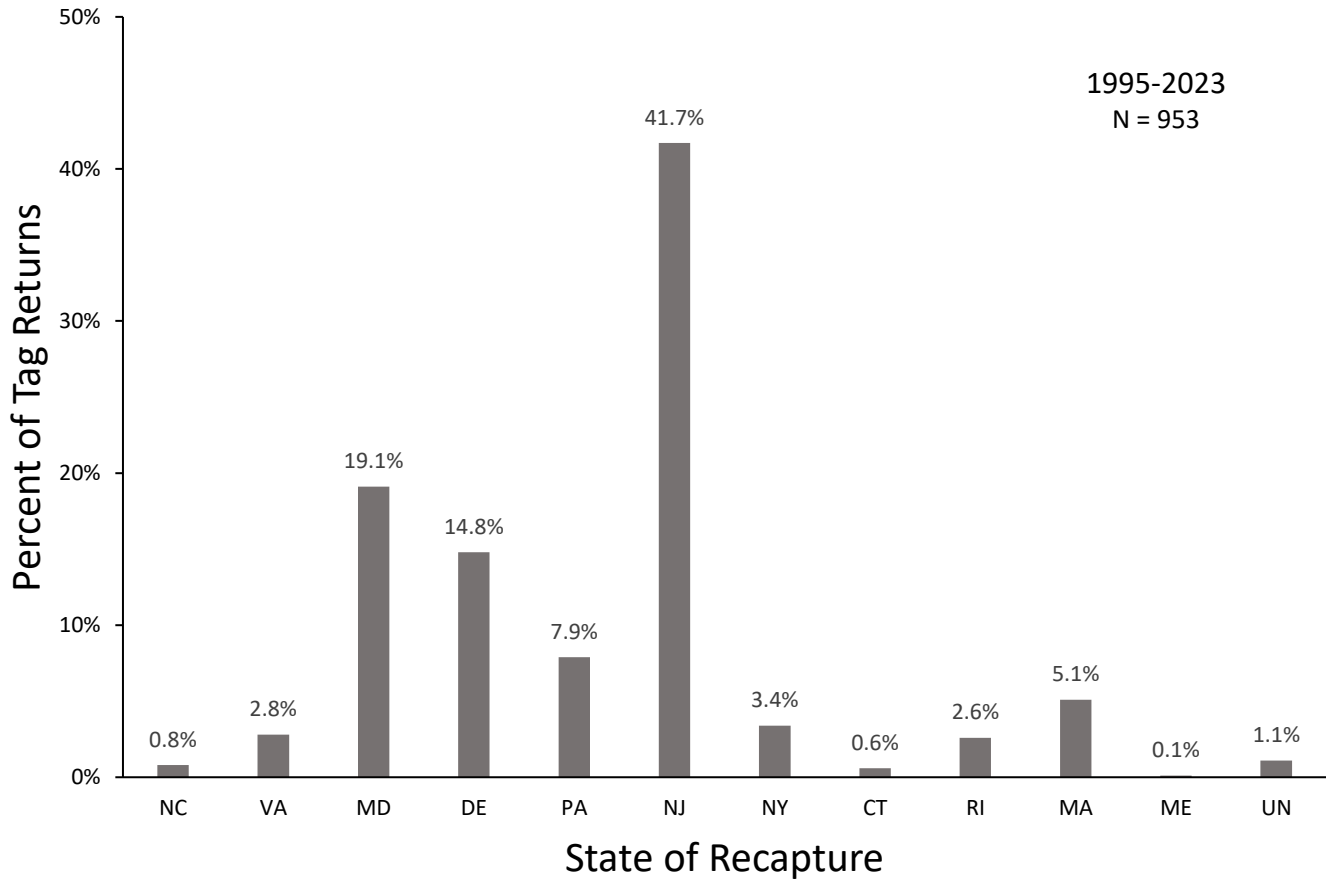


Figure 5. Percentage of tag returns by state of recapture for Striped Bass implanted with U.S. Fish and Wildlife Service anchor tags by the Pennsylvania Fish and Boat Commission during spawning stock surveys on the Delaware Estuary between 1995 and 2023.

Each time an angler reports a tagged fish, biologists gather valuable information about their movements and growth, if accurate details are provided. In 2023, anglers reported 27 fish that have been tagged by PFBC biologists. Of these 27 fish, 12 were captured in the Delaware River and Bay, 12 were captured in the Chesapeake Bay, and 3 were captured along the Atlantic coast. There were a few notable recaptures that provide interesting information about movement and harvest patterns. A large female tagged in May 2020 and recaptured in 2023 represents the fish that was at-large for the longest duration. This fish was tagged near the Betsy Ross Bridge, NJ, in the Delaware River and recaptured in April 2023 in the Delaware River near Philadelphia. Additionally, two fish were recaptured twice in 2023. The first fish was tagged in May 2022 near the Rancocas Creek. It was recaptured first on April 1st in the vicinity of Trenton, NJ and again on June 21st in the Atlantic Ocean offshore of Newport, Rhode Island. The second fish was tagged in May 2023 near the Tacony-Palmyra Bridge. It was recaptured twice in Baltimore Harbor, MD, initially

Pennsylvania Fish & Boat Commission Biologist Report

captured on June 8th and again on July 15th. These two fish tell an interesting story about Striped Bass movements after exiting Delaware Bay. As these fish demonstrate, some fish will migrate along the Atlantic Coast while others will move through the C&D Canal to the Chesapeake Bay where they reside during the summer months. Of the 12 fish that were recaptured in the Delaware River and Bay, none were harvested. This follows the decades-long trend of low harvest rates in the Delaware River system. On the contrary, of the 12 fish that were captured in the Chesapeake Bay, 10 were harvested, either by recreational or commercial fishermen. This follows the long-term harvest trend of PFBC tagged fish that are recaptured in the Chesapeake Bay system.

Regarding regulations for Striped Bass fishery in 2024, Figure 6 reiterates the rule put in place in 2020 requiring the use of non-offset circle hooks when fishing with bait in the Delaware Estuary, regardless of species being targeted, while Table 1 provides the current size and creel limits for the 2024 Striped Bass season. As mentioned earlier in this document, Addendum II measures will be enacted on May 1, 2024. Since Pennsylvania's April and May slot fishery is a conservation equivalency measure, modifications were also made to these regulations to meet required mortality reductions and remain in compliance with Addendum II. As such, based on analysis conducted by staff and approved by the ASMFC Striped Bass Management Board, beginning May 1, 2024, the April and May harvest slot will now allow for the harvest of 1 Striped Bass from 22" to less than 26". Anglers are also 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 through the huntfish.pa.gov webpage. Likewise, if fishing across the state line in New Jersey, Pennsylvania anglers must also register in the free [New Jersey Saltwater Recreational Registry Program](#).

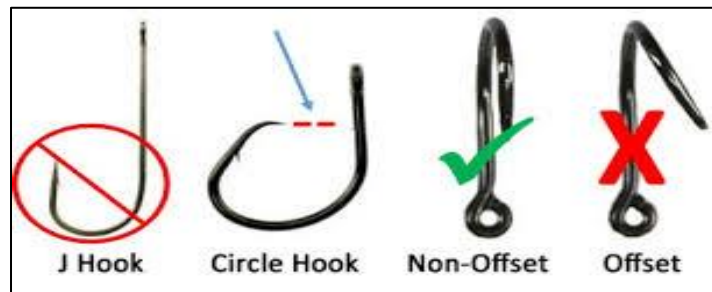


Figure 6. Approved in-line (Non-offset) hook type for use in the Delaware Estuary

*Image courtesy of the Virginia Marine Resources Commission

Pennsylvania Fish & Boat Commission Biologist Report

Table 1. 2024 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, 26, and 31 inches are not inclusive, meaning it is illegal to harvest fish ≥ 24 , ≥ 26 , or ≥ 31 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. It is unlawful for any person to gaff or attempt to gaff any Striped Bass at any time when fishing	4/1 - 4/30
	22" to less than 26"	1	In-line (non-offset) circle hooks required when fishing with bait. It is unlawful for any person to gaff or attempt to gaff any Striped Bass at any time when fishing	5/1-5/31
	28" to less than 31"	1	In-line (non-offset) circle hooks required when fishing with bait. It is unlawful for any person to gaff or attempt to gaff any Striped Bass at any time when fishing	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 31"	1	In-line (non-offset) circle hooks recommended when fishing with bait. It is unlawful for any person to gaff or attempt to gaff any Striped Bass at any time when fishing	1/1-12/31

Anglers wishing to consume Striped Bass or other species of fish in the Delaware Estuary and River are advised to consult the fish consumption advisory information in the [Pennsylvania Fishing Summary Booklet](#). There is currently a one meal per month advisory for Striped Bass 28 inches to less than 31 inches in length. Slot size Striped Bass (21 to less than 24 inches in length and 22 to less than 26 inches in length) are now covered by the general statewide advisory for recreationally caught sportfish of one meal per week.

Tyler Grabowski – Area 6 Fisheries Biologist

Mike Porta – Area 6 Fisheries Manager