

Delaware Estuary

Bucks, Delaware, and Philadelphia Counties

2019 Striped Bass Survey

The Pennsylvania Fish and Boat Commission (PFBC) assessed the Striped Bass spawning stock in the Delaware Estuary between May 13 and June 9, 2019. The survey was conducted at 21 index sites ranging from the mouth of Rancocas Creek, NJ (river mile [RM] 109) downriver to the mouth of Raccoon Creek, NJ (RM 80). Each index site was sampled twice using an electrofishing boat. Additional electrofishing took place at Trenton Falls near the head-of-tide targeting individuals greater than or equal to (\geq) 16 inches in total length (TL) to increase the sample of tagged fish to further contribute to movement and mortality estimation.

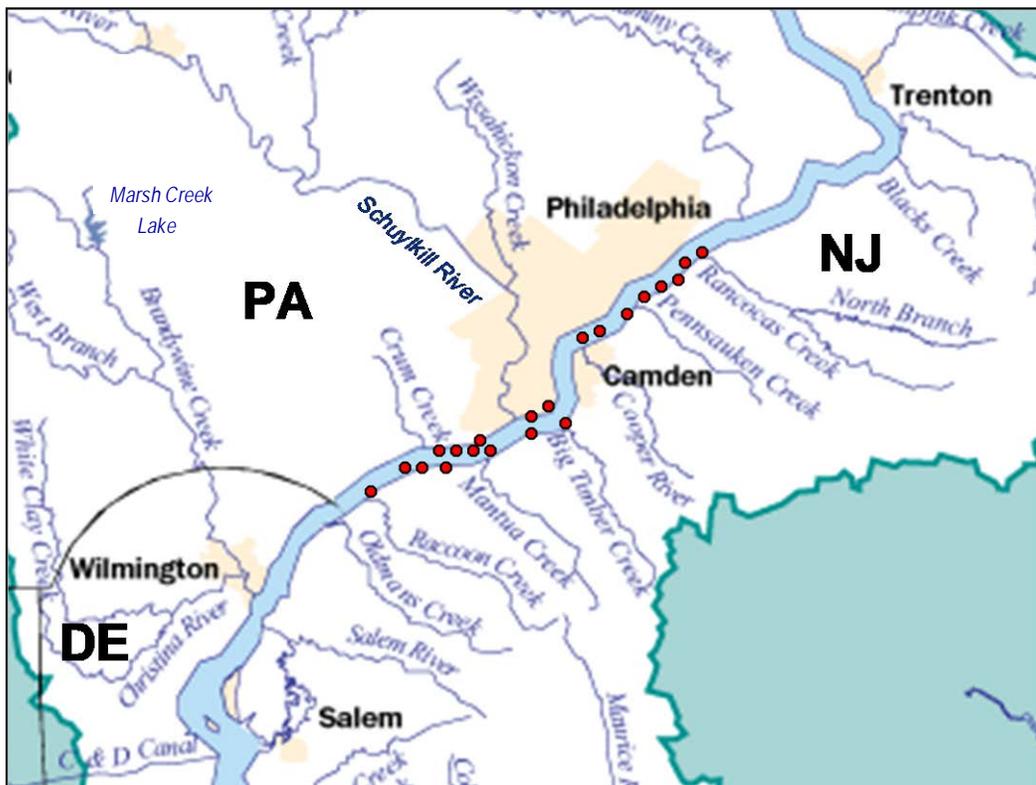


Figure 1. Map of the 21 index sites sampled between Rancocas Creek (RM 109.76) and Raccoon Creek (RM 80.66) on the Delaware Estuary between May 13 and 28, 2019. Base map adapted from the Delaware River Basin Commission.

Pennsylvania Fish & Boat Commission Biologist Report

A total of 267 fish were captured at 21 index sites in 2019. Males accounted for 77% of the total catch and ranged from 7 to 38 inches in TL, while females accounted for 10% of the total catch and ranged from 19 to 48 inches in TL. Sex could not be determined for the remaining 13% of fish primarily because they were small, sexually immature juveniles or larger individuals lacking “ripe and running” sex determinants at the time of capture. Those fish ranged from 5 to 27 inches in TL.

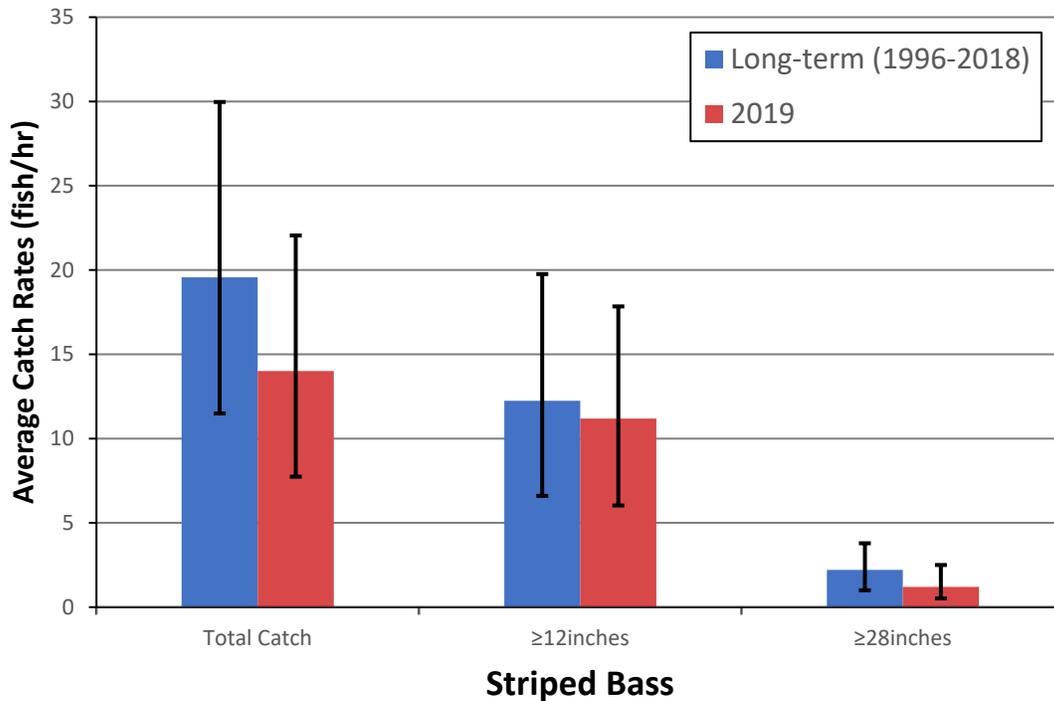


Figure 2. Electrofishing catch rates for Striped Bass captured in the Delaware Estuary between May 13 and 28, 2019 compared to corresponding long-term averages (1996 to 2018). Vertical black bars depict the 95% confidence intervals.

The total catch rate (14.0 fish/hr), catch rate of fish ≥ 12 inches in TL (11.2 fish/hr), and catch rate of fish ≥ 28 inches in TL (1.2 fish/hr) were all lower than the long-term averages (Figure 2). The total catch rate and catch rate of fish ≥ 28 inches in TL were the fifth and third lowest catch rates recorded, respectively, since long-term monitoring began in 1996. However, a large proportion (53%) of the total catch was comprised of fish from 15 to 19 inches in TL (Figure 3). These fish were representative of strong year classes from 2014 and 2015 and are projected to enter the “new” spring slot limit as 21 to less than 24-inch fish in 2020.

Pennsylvania Fish & Boat Commission Biologist Report

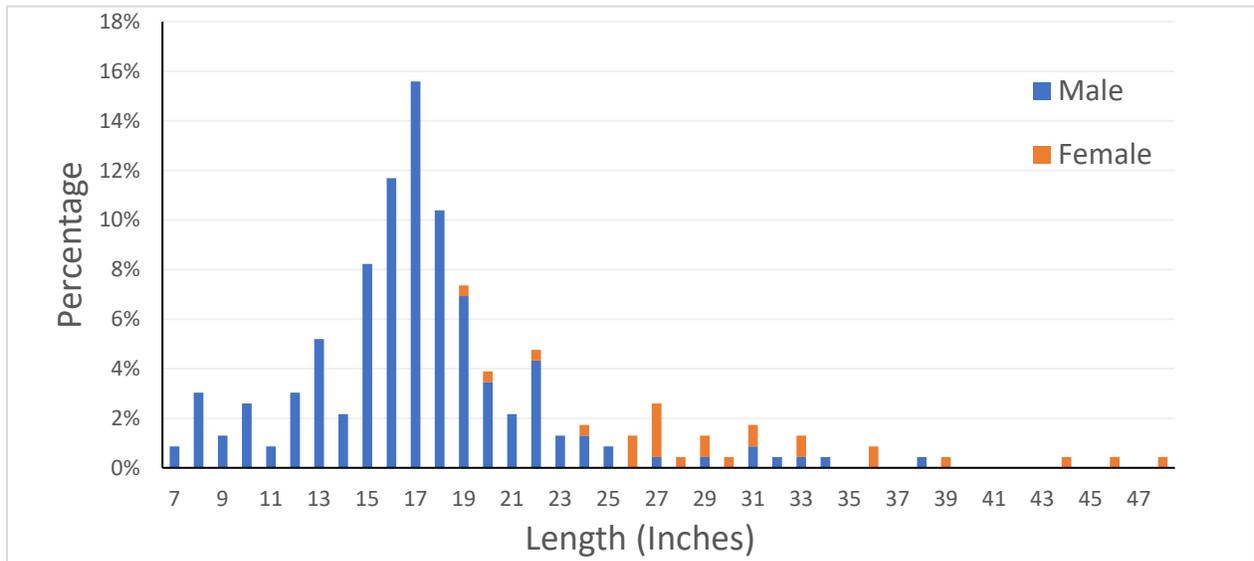
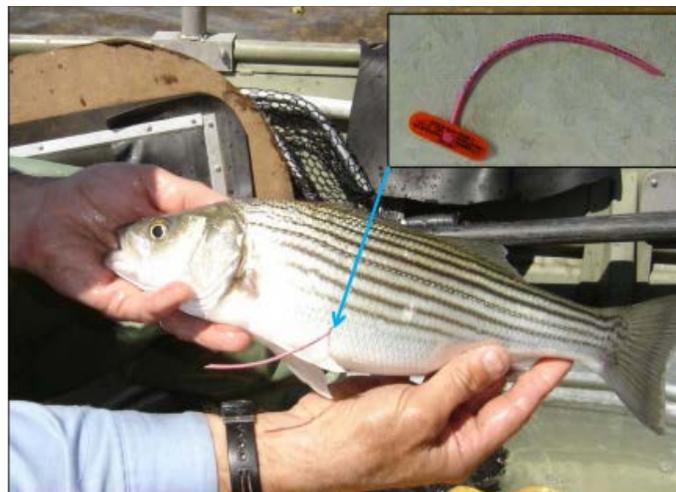


Figure 3. Length-Frequency distribution of Striped Bass captured during the 2019 Striped Bass spawning stock survey by sex.

A total of 185 Striped Bass ≥ 16 inches in TL were tagged with a pink colored U.S. Fish and Wildlife Service reward tag in 2019 (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

Pennsylvania Fish & Boat Commission Biologist Report

Between 1995 and 2019, the PFBC tagged a total of 5,474 Striped Bass in the Delaware Estuary. As of January 9, 2020, 16% of the 5,474 tagged fish were reported to be 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. These tagged fish were caught from Maine to North Carolina, with a large proportion of them caught by anglers within the Delaware Bay and its tributaries and off the New Jersey coast in the Atlantic Ocean (Figure 4). Fishers report that 51% of the tagged fish caught were released; 47% were harvested; and 2% were found dead, dying, or were used for scientific research. Recreational and commercial fishermen harvested 47% and 77% of their Striped Bass catches, respectively. The ratio of female to male Striped Bass in the harvest was 1.5 to 1, indicating substantially more harvest pressure on the female segment of the population. This ratio was likely influenced by the large number of tagged males that were smaller than legal length in many fisheries along the Atlantic Coast which prohibited their harvest.

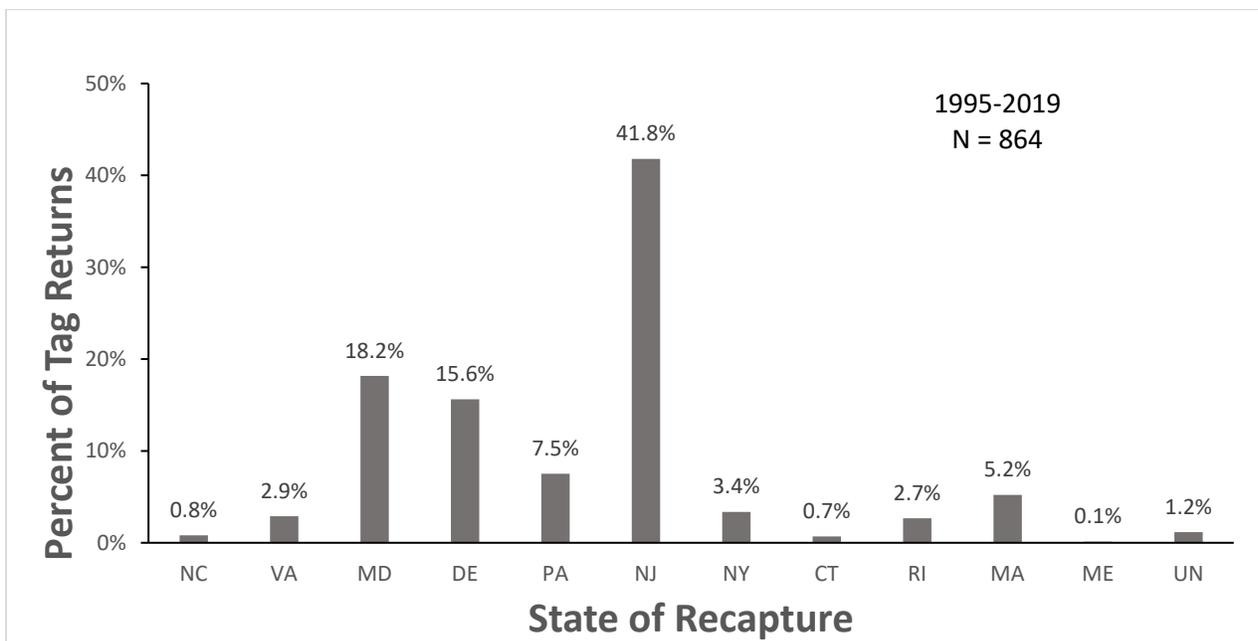


Figure 4. Percent of tag returns by state of recapture for Striped Bass tagged by the Pennsylvania Fish and Boat Commission in the Delaware Estuary between 1995 and 2019. UN = unknown recapture location.

Furthermore, there was no measurable increase in the number of tag returns from Pennsylvania since implementation of Pennsylvania's slot limit regulation in the Delaware Estuary in 2009. Catch and harvest of slot-sized fish when regulated under our previous slot size (21-25 inches) showed that between the period of April and May, Pennsylvania anglers released 68% of tagged fish whereas Chesapeake Bay (MD, VA, DC) anglers harvested 65% of tagged fish (Figure 5).

Pennsylvania Fish & Boat Commission Biologist Report

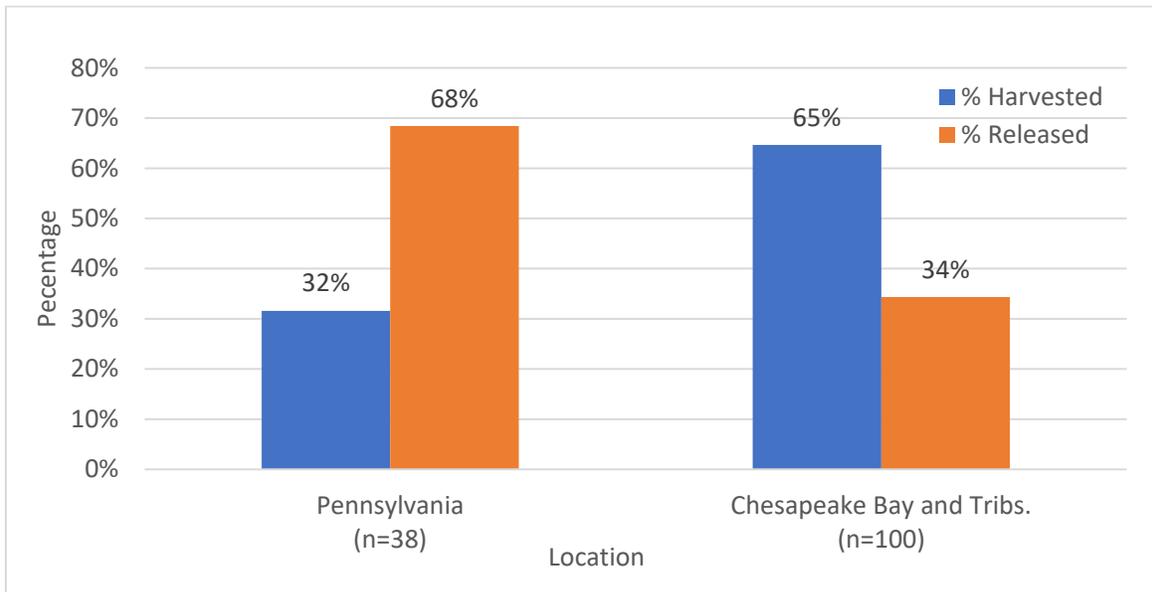


Figure 5. Disposition of slot-size Striped Bass, tagged by any state, during the months of April and May between 2009 and 2019 for either Pennsylvania anglers or Chesapeake Bay and its tributaries' anglers (n=number of tag fish reports).

Additionally, the disposition of fish ≥ 28 inches in TL coastwide was analyzed for fish tagged from Pennsylvania waters. Although the data are limited, preliminary results suggest that Pennsylvania anglers were the only group to release more fish than were harvested (Figure 6).

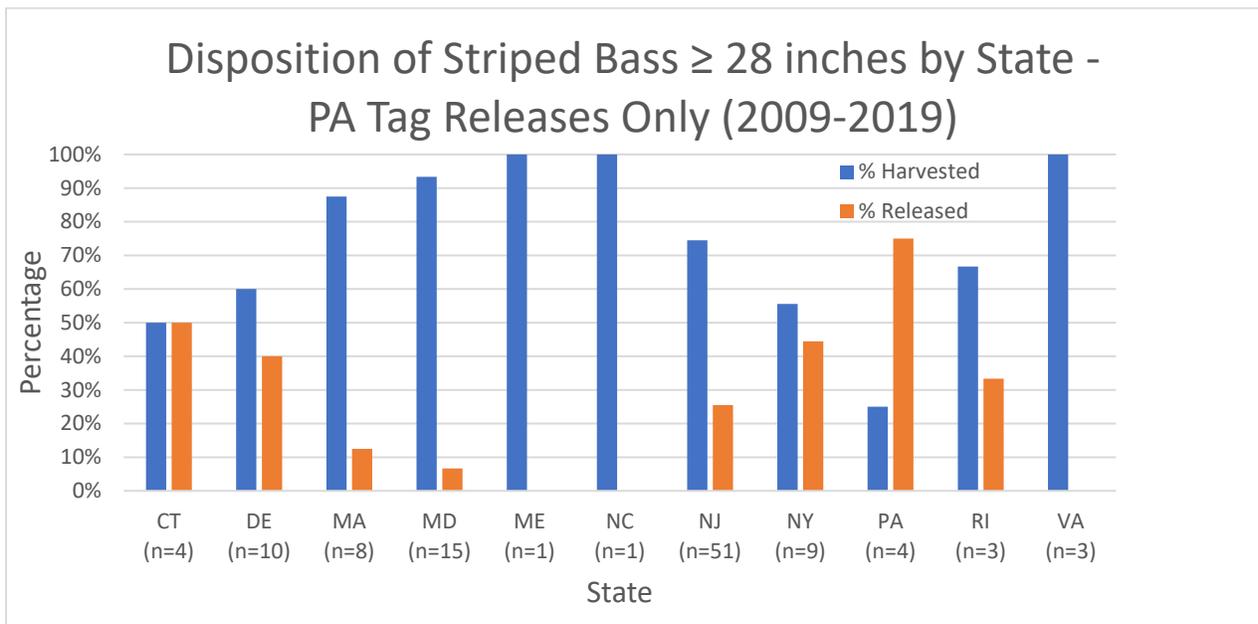


Figure 6. Disposition by State (n=number of fish) of Striped Bass ≥ 28 inches in TL tagged by the Pennsylvania Fish and Boat Commission between 2009 and 2019.

NEW STRIPED BASS FISHING REGULATIONS FOR 2020

Striped Bass are governed by the Atlantic States Marine Fisheries Commission (ASMFC), a deliberative body of the Atlantic coastal states responsible for coordinating the conservation and management of nearshore fishery resources. At its October 2019 meeting the [Striped Bass Management Board approved Addendum VI to Amendment 6 of the Interstate Fisheries Management Plan for Atlantic Striped Bass](#). Addendum VI was initiated in response to the 2018 Benchmark Stock Assessment, which indicates the resource is overfished and experiencing overfishing. The Addendum’s measures are designed to reduce harvest, end overfishing, and bring fishing mortality to the target level in 2020. As a member state, Pennsylvania complies with ASMFC’s management requirements to change Striped Bass fishing regulations for the Delaware River and Delaware Estuary as required. Therefore, beginning April 1, 2020, Pennsylvania will implement new Striped Bass fishing regulations for the Delaware River (non-tidal) and Delaware Estuary, including tidal portions of tributaries which are shown in Table 1. These regulatory changes were approved by ASFMC’s Striped Bass Management Board at its February 2020 meeting following technical review and acceptance of proposed changes based on achieving at least an 18% reduction in fishing mortality. At ASMFC’s first public meeting held in Pennsylvania and hosted by the Delaware River Fishermen’s Association in Bristol, Pennsylvania last August, area anglers supported more conservative fishing regulations for the Delaware River, Delaware Estuary, and along the coast to address the decline in the fishery.

Table 1. Regulations for the Striped Bass fishery in the Delaware River and Estuary to begin April 1, 2020, including tributaries from the mouth upstream to the limit of tidal influence. Note the upper slot limits 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 <u>required</u> when fishing with bait	4/1 - 5/31
	28” to less than 35”	1	In-line (non-offset) circle hooks <u>required</u> 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 <u>recommended</u> when fishing with bait	1/1-12/31

Pennsylvania Fish & Boat Commission Biologist Report

Additionally, Figure 7 illustrates the legal In-line (i.e. non-offset) circle hook design required when fishing with bait. The ASMFC defines circle hooks as a non-offset hook where the point is pointed perpendicularly back towards the shank. The term “non-offset” means the point and the barb are in the same plane as the shank. Hook manufacturers typically sell them labeled and packaged as “Circle In-Line” and/or “Circle Non-Offset.” Since these new regulations were not approved in time for publishing in the [2020 Summary Fishing Regulations and Laws](#), the Pennsylvania Fish and Boat Commission will publicize them through various media sources employing outreach and education efforts to inform and facilitate compliance with this important conservation measure in as timely a manner as possible for the upcoming season. Since catch and release practices contribute substantially to overall fishing mortality, the circle hook requirement is a management strategy intended to reduce release mortality in recreational Striped Bass fisheries coastwide. The use of in-line (non-offset) circle hooks is preferred over offset design (far right picture below) because of their proven ability to hook fish in the mouth, simplify hook removal, and reduce injury to the released fish. Therefore, to address targeted and non-targeted Striped Bass release mortality, the in-line circle hook requirement will apply to anglers targeting any sportfish species with bait in the tidal Delaware Estuary. This measure offers added protection to adult Striped Bass on the spawning grounds during spring and year-round protections to resident juveniles caught by anglers targeting other species in the tidal reach. For the non-tidal Delaware River, circle hooks are strongly recommended when anglers target any species with bait.

Anglers unfamiliar with how to use circle hooks should understand their design requires the angler let the fish hook itself. This requires a different fishing technique to hook and catch fish effectively than what some anglers may be accustomed to. When using a circle hook simply hold the rod or leave it in a holder, wait for the fish to swim off when a strike occurs, then pull the rod tip down, begin reeling in line to complete the hooking process, and reel the fish in normally. It is important to not set the hook by jerking or pulling the rod tip up and back to set the hook like when using the more common “J” hook design. This technique could result in fewer “hook ups” after a strike occurs.

Pennsylvania Fish & Boat Commission Biologist Report

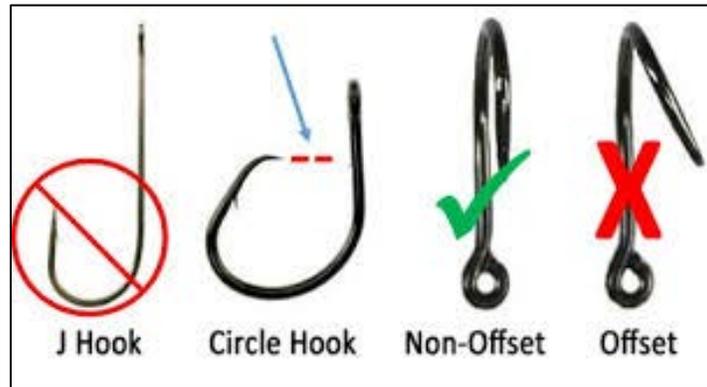


Figure 7. Approved in-line (Non-offset) hook type for use in the Delaware Estuary

*Image courtesy of the Virginia Marine Resources Commission

Furthermore, be advised that New Jersey regulations apply if you 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 [Pennsylvania Fishing Summary Booklet](#). There is currently a one meal per month advisory for Striped Bass 28 inches to less than 35 inches in TL. 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.

*Tyler Grabowski
Fisheries Biologist
Area 6 – Southeastern Pennsylvania
and
Bryan Chikotas
Area Fisheries Manager
Area 7 – Southcentral Pennsylvania*