Pennsylvania Fish & Boat Commission Biologist Report

Delaware River

Monroe County

American Shad Monitoring, 2017

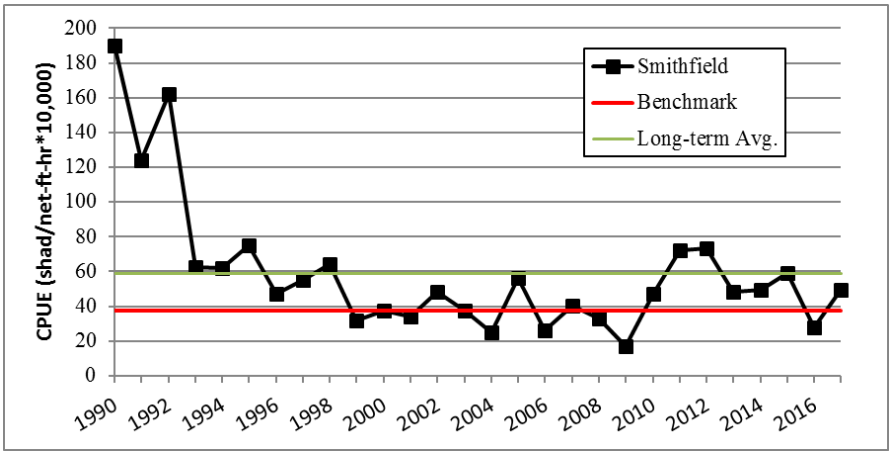
Management of American Shad in the Delaware River is a collective effort undertaken by Delaware River Basin Fish and Wildlife Management Cooperative (Co-op) member agencies, under the direction of the Atlantic States Marine Fisheries Commission (ASMFC). The Pennsylvania Fish and Boat Commission (PFBC) has a long-term historic association with management of this anadromous species and engages collaborative management of this species through these organizations. Thus, harvest and loss management, and population monitoring of American Shad are guided by the American Shad Sustainable Fisheries Plan (SFP) accepted by ASMFC February 2017. We annually present results of assessments guided by this plan in this summary report. Although information and interpretation presented below reflect findings and cursory interpretations; please understand that additional analysis, scrutiny, and review will follow, thus these results must be considered provisional.

Smithfield Beach Spawning Effort

The PFBC annually indexes the returning American Shad run each spring via gill netting at Smithfield Beach (RM 218.0). Night-time gill netting occurs during May targeting adult shad that are actively spawning within the pool. A total of 844 shad (611 females, 233 males) were collected. Shad sizes ranged from 18.7 to 24.2 inches total length (TL) for females, and 16.7 to 25.4 inches TL for males. The 2017 catch-per-unit-effort (CPUE) was 49.7 shad/(net-hour* 10,000), which ranked 13th over the 28-year time-series (1990-2017; Figure 1).

The 2017 CPUE from Smithfield Beach was below the long-term average but above the action benchmark, suggesting a near average spawning run over the years of monitoring. Yet, anglers consistently expressed exceptional satisfaction with the 2017 spawning run, citing frequent high numbers of hook-ups. Weather conditions in May were cooler than typical, with frequent, strong cold-fronts that may have suppressed shad spawning activities potentially being under-represented by the 2017 Smithfield Beach index.

Figure 1. Annual catch-per-unit-effort for American Shad from the Delaware River at Smithfield Beach during adult collection associated with the egg-take for fish culture operations, 1990 - 2017.

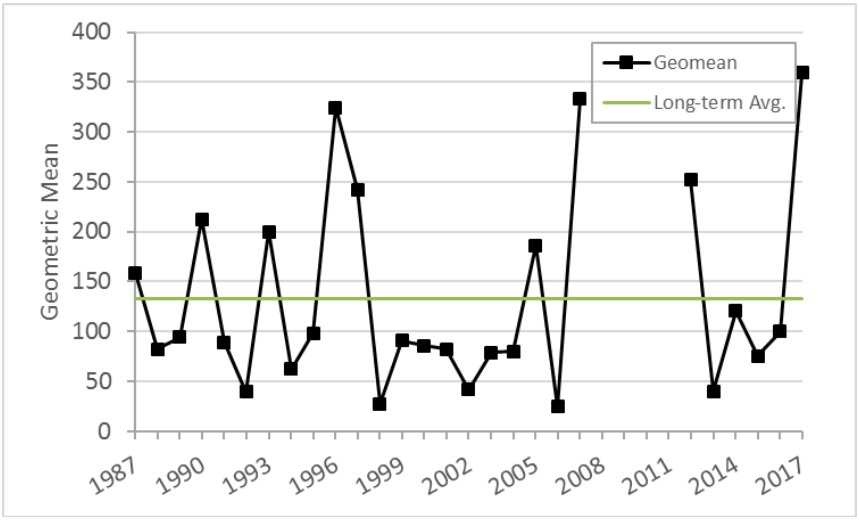


Young-of-the-Year Monitoring Effort

The Delaware River young-of-year (YOY) production index is derived from a joint sampling effort by Co-op members. Relative abundance (geometric mean) of young is estimated by beach seining (seine:300 ft long by 12 ft deep) from August through October, at three historic sites: Phillipsburg (RM 183), Water Gap (RM 211), and Milford, PA (RM 256). The 2017 YOY catches represents a 31-year time-series peak. The 2017 geometric mean, 359.4, was well above the long-term time-series average (132.6, Figure 2).

We are highly encouraged by the production of young shad in 2017. The YOY index yields insight into the magnitude of future adult returns derived from those year classes. Typically, strong year-classes are well represented in future spawning runs. Past YOY monitoring surveys indicated the 2012 year-class was exceptionally abundant (above the long-term mean). Combined with the exceptional 2017 year-class, adult shad should continue to return in numbers that provide for good future angling opportunities.

Figure 2. Annual geometric means of American Shad YOY Delaware River monitoring. No sampling occurred in 2008 to 2011.



Assessment of Delaware River American Shad Sustainability

The American Shad SFP defines benchmarks intended to characterize the sustainability of the Delaware River shad population. The SFP benchmarks are based on a monitoring program's time-series annual relative abundance distributions. Three consecutive years that yield values lower than the benchmark (i.e., 25th quartile) are considered unsustainable, requiring initiation of appropriate corrective management action(s). The benchmark for the YOY production was recently updated to a standardized index in the 2017 SFP, which has not been applied to the current data set thus no bench mark value has been established. However, given that 2017 was the highest recorded year out of the 31-year time series it is highly doubtful its value would fall below the new value.

The 2016 adult CPUE from Smithfield Beach sampling represented the first year when relative abundance fell below the identified management benchmark, initiating the count towards potential corrective management action. Since the 2017 Smithfield Beach CPUE value that followed was above the SFP benchmark, this earlier low count has been nullified. Considering exceptional 2017 YOY production, it is likely management changes will not be required in the near term. Monitoring will continue in 2018.