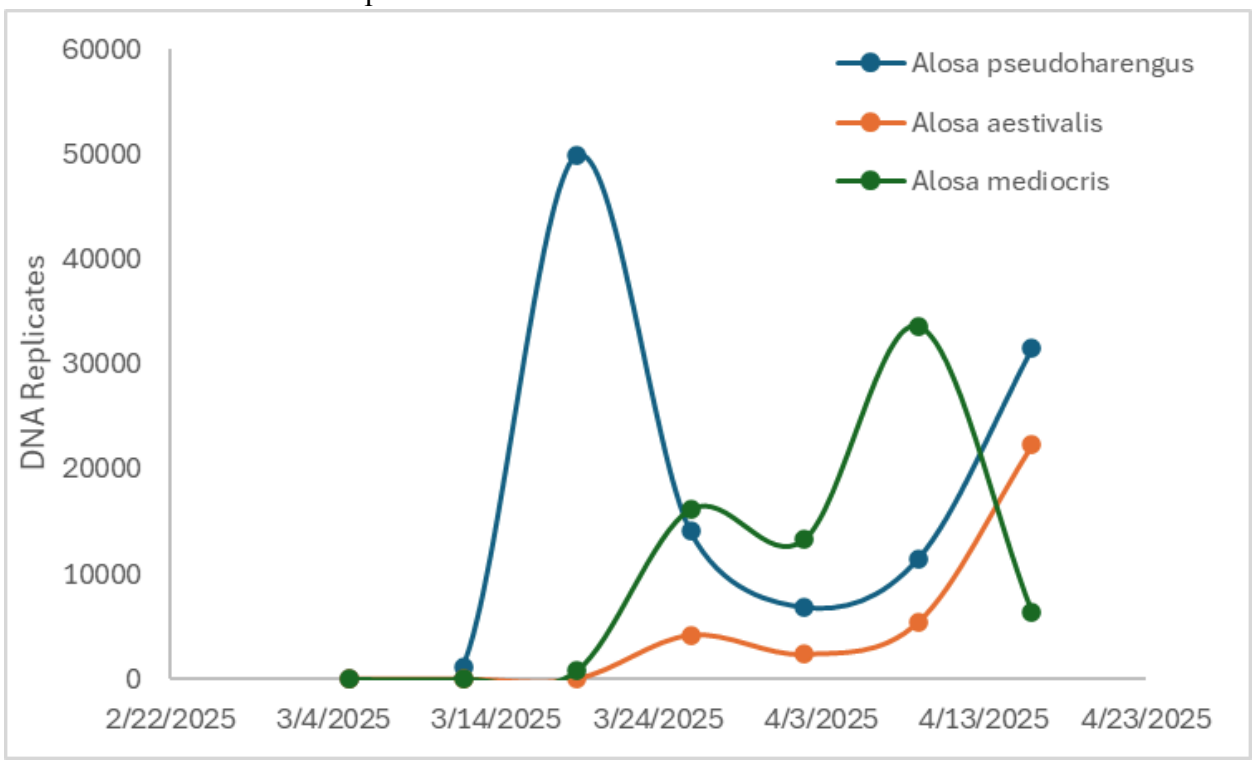
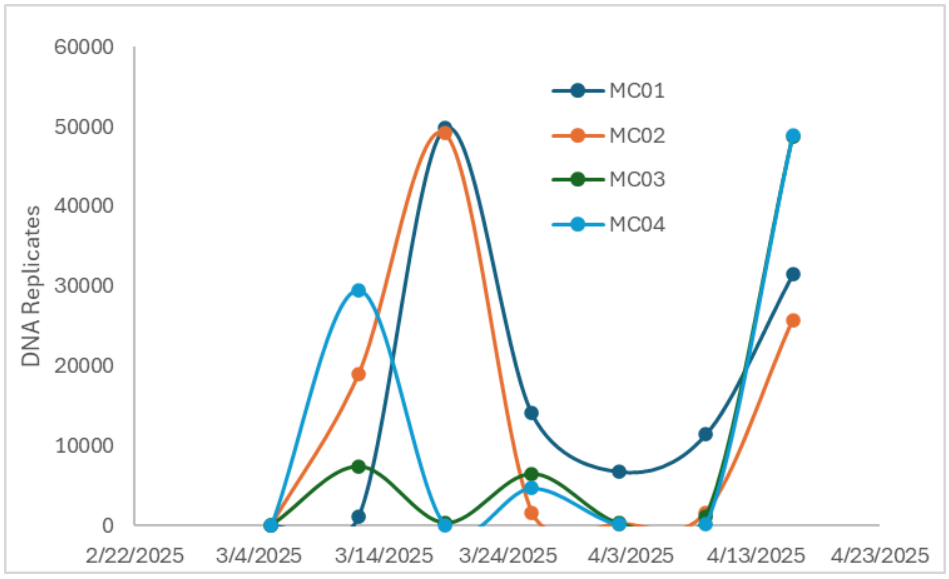
Fisheries Ecosystem Assessment Division

Last Month

Mattawoman Creek Monitoring in 2025 – Staff began data analysis for Mattawoman Creek anadromous spawning monitoring. We are waiting for the last of the eDNA results from later in the season, but some preliminary graphs were pulled together for data from March 5 to April 16. Alewife were the first to show up at the lowest site (MC01, near MD 225 bridge), near the fresh-tidal confluence, the third week of March. The peak of Hickory Shad in the creek was around April 9th. Blueback Herring started increasing in abundance on April 16th. Alewife were detected at the most upstream site (MC04), nearest development in the Waldorf area; however, Blueback Herring and Hickory Shad were not. This may be the result of the data set ending on April 16th. We will investigate further when all the data are available. On the invasive fish front, Chesapeake Channa were detected at the three upstream sites (MC02-MC04) and Blue Catfish were not detected in the samples.

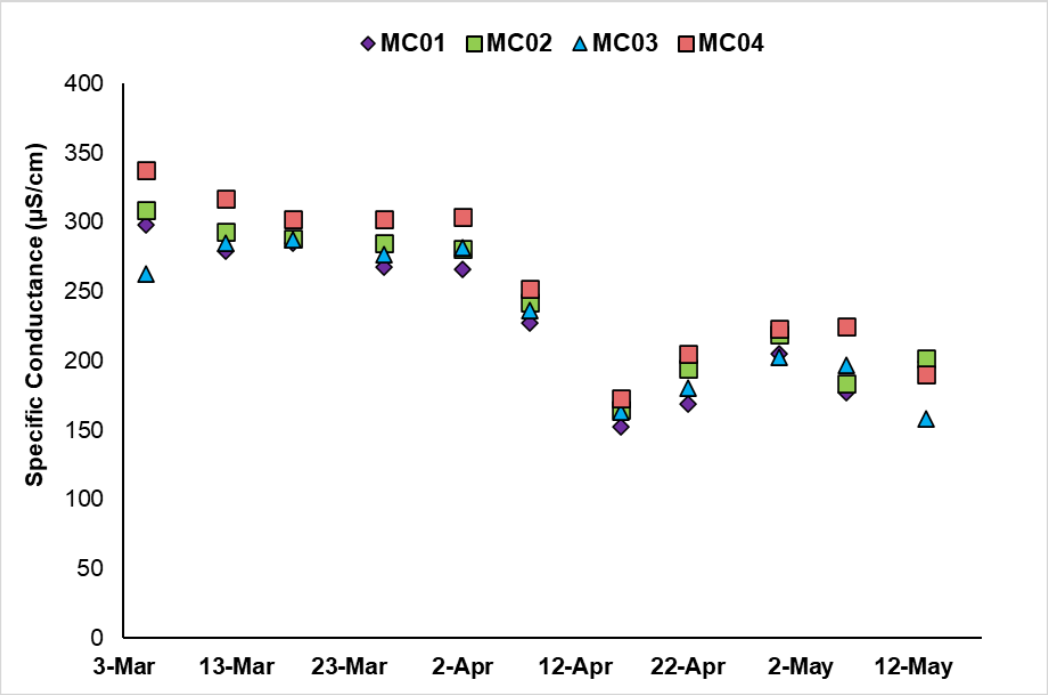


Alosid DNA replicates detected from the most downstream site, MC01.

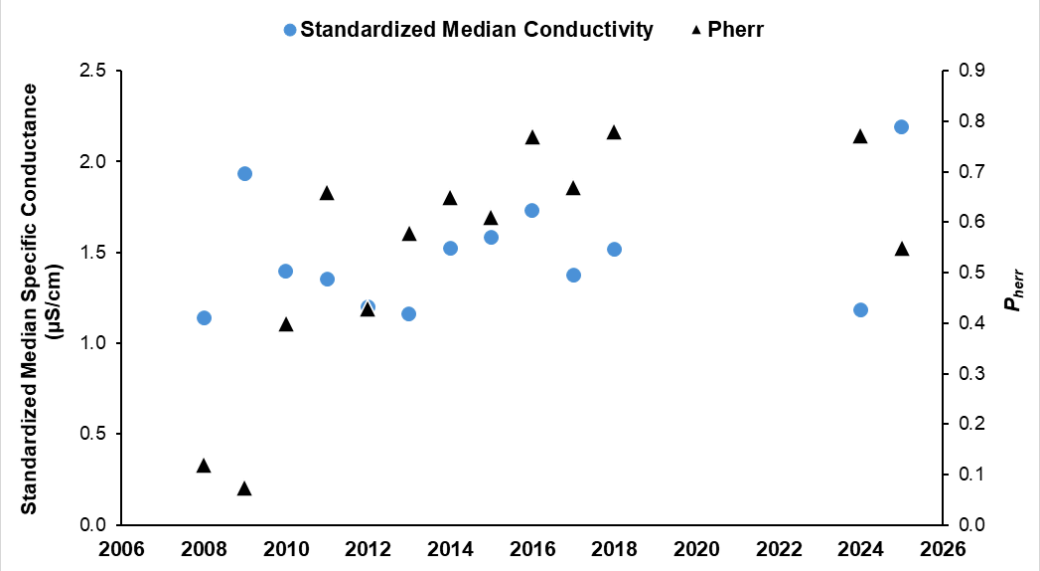


Alewife DNA replicates detected at the four different sites. MC01 is the furthest downstream (near MD 225). Site numbers go up as we sampled upstream (MC02 - Bumpy Oak Rd, MC03 - Pomfret Rd, MC04 - Billingsley Rd).

Mattawoman Ichthyoplankton – Staff completed all picks of the samples. Staff also completed all identifications of the ichthyoplankton in the samples and compiled results from these samples. Yellow Perch spawning was detected at all four Mattawoman Creek sampling sites; White Perch spawning was detected at three of the four sampling sites, as eggs and larvae were absent from MC02 samples. Herring and/or shad spawning was detected at all four Mattawoman Creek sampling sites. The percent of samples containing herring and/or shad eggs and/or larvae (P_{herr}) was 0.55 in 2025, a considerable decline from the previous P_{herr} of 0.77 in 2024. Mattawoman Creek specific conductance (µS/cm) was extremely elevated in 2025, with an annual median conductance of 2.19-times the normal background level for Coastal Plain streams; this is a substantial increase compared to an annual median of just 1.18-times normal background levels in 2024. We have found higher conductance to be associated with lower P_{herr} across the streams we have surveyed in the Chesapeake Bay watershed. It is possible that elevated conductance levels, often related to increased road salt usage, could disrupt anadromous spawning, either by altering the olfactory/chemical cues fish use to identify spawning streams or by direct mortality to fish eggs and larvae due to exposure to toxic components or increased osmotic stress; however, high conductance can also be related to development and may indicate the presence of other stressors associated with urbanization in the stream.

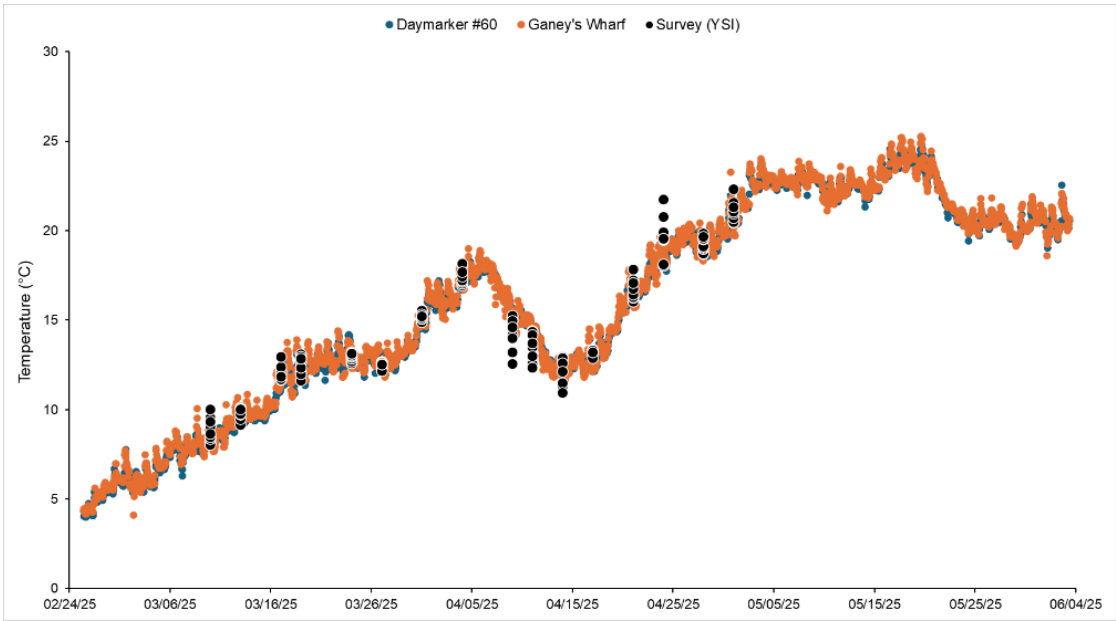


Specific conductance observations collected *in situ* at four Mattawoman Creek sampling sites during the 2025 anadromous fish spawning survey.



Annual median specific conductance values from Mattawoman Creek, standardized using Coastal Plain background levels (109 µS/cm) and corresponding annual estimates of P_{herr} in Mattawoman Creek plotted across sampling years.

Choptank River Temperature Loggers – Temperature loggers deployed in the Choptank River to monitor Striped Bass spawning grounds water temperatures were collected on June 3rd. Water temperatures gradually rose in the preferred spawning temperature regime from March 27th to April 6th. A cold snap pushed water temperatures down to 11-12 ºC on April 15th. Water temperatures then rose again to preferred spawning temperatures. Staff noted a significant Striped Bass spawn during the first warm up and another spawn during the second warmup while conducting egg and larval sampling.



Choptank River water temperatures collected by temperature loggers (orange and blue dots) and during surveys (black dots) in the Striped Bass spawning area.

Midwater Trawl Sample Processing – Staff are picking samples from the midwater trawl sampling on the Choptank River. Larvae are kept and White Perch and Striped Bass will be examined for gut content analysis. Staff are wrapping up first picks and will finish second picks soon after. Some samples had to be subsampled due to very high numbers of larvae in the sample.

St Clements Bay/Breton Bay – Staff traveled down to Leonardtown on 6/17 to evaluate the seining sites on these two systems, which have not been sampled by FEAD since 2005. Most areas had a lot of Submerged Aquatic Vegetation, but seining should still be possible in those areas. On the St. Clements Bay, the original sampling sites were retained. The lower most site is heavily riprapped with living shorelines. On Breton Bay, Sites 1 and 3 had to be moved to nearby locations. The original sites were riprapped. Site 2 was still available but had signs of severe erosion. Staff pulled the beach seine at 2 sites in St Clements Bay and one site in Breton Bay. The typical beach seine species were captured (Silversides, Mummichogs, Striped Killifish, etc.).

Tred Avon River Training Day – Staff participated in a training day for the summer fieldwork on 6/24. The goal of the training day was to get seasonal Zophia Galvan and intern Henry Bosley up to speed on our sampling protocols, and to incorporate iPad data collection into the summer

sampling process. Very low DO was present at the uppermost site near Easton Point Marina (1.4 mg/L), in both the channel and the 4ft depth contour used to pull the beach seine. Surface water temperature at this site was also 33.8ºC, which is similar to the highest temperature recorded in the Tred Avon River in the survey (33.78ºC on August 15, 2016). Air temperatures exceeded 36ºC during the training day. Staff noted numbers of YOY White Perch and YOY Striped Bass were higher than the last several years in the beach seine samples.

Intern – Henry Bosley started a summer internship in mid-June. He has assisted with developing ideas for an ACFHP storymap, will continue to assist with field sampling, and prepare a habitat analysis of seine data. Henry is located in E-4 of the Tawes building.

Access Databases – Staff compiled data sets into Access databases for each sampling project. These data sets will incorporate all historical data collected. Staff began digital collection of data with an iPad during their spring fieldwork. Overall, the process went smoothly and streamlined data sharing and checking data. The process also allows the easy addition of this data to the Access databases. This process will be expanded upon for iPad use during the summer fieldwork.

Federal Aid Report – Staff are finishing up a draft of the 2024 Federal Aid Report.

Critical Areas Commission (CAC) - We met with CAC to initiate a discussion about the need to extend protection to anadromous fish spawning streams. Staff identified 5 or 6 areas that could be useful to protect anadromous fish spawning streams. A Google sheet was circulated to meeting participants to add additional insight into their areas. FEAD will make a presentation to local planners on development and fish habitat on July 17.

Targeted Ecological Areas - Staff attended the Chesapeake and Coastal Services' (CCS) meeting to review and update the state's identified Targeted Ecological Areas. We will review the existing GIS layers for Priority Anadromous Spawning Watersheds and High Priority Blue Infrastructure Shorelines and Watersheds. Additionally, CCS has interest in the inclusion of existing statewide 12-digit watershed percent impervious surface estimates produced by FEAD. Anadromous fish information will be combined with the other criteria (Blue and Green Infrastructure, rare, threatened, and endangered species, water quality, and aquatic life) to prioritize land acquisition via Program Open Space.

Striped Bass - Menhaden Traffic Light Index (TLI) - Staff have been working with Stakeholder Outreach and Services Division on a web layout for the release of the TLI. The TLI will be a communication tool for depicting the balance between resident Striped Bass and their important prey.

Looking Forward

Staff will finalize drafts for the 2024 Federal Aid Report.

Staff will continue assembling master Access datasets and developing metadata summaries for each survey.

Staff will continue processing Midwater Trawl samples in the lab.

Staff will begin summer fieldwork sampling on 7/7 on the Tred Avon River. Sampling will take place 3 times a week through the end of September.