

Atlantic States Marine Fisheries Commission

Horseshoe Crab Adaptive Resource Management Subcommittee & Delaware Bay Ecosystem Technical Committee

Call Summary

Tuesday, September 23, 2025

9:00 – 10:30 AM

Attendance:

Horseshoe Crab Adaptive Resource Management Subcommittee: John Sweka (Chair), Jim Lyons (Vice Chair), Jason Boucher, Margaret Conroy, Steve Doctor, Conor McGowan, Bryan Nuse, Wendy Walsh,

Delaware Bay Ecosystem Technical Committee: Wendy Walsh (Chair), Kat Christie, Steve Doctor, Danielle Dyson, Francesco Ferretti, Sarah Karpanty, Ethan Simpson, Yan Jiao, Jordan Zimmerman

Horseshoe Crab Technical Committee Members: Steve Doctor, Danielle Dyson, Kelli Mosca, Derek Perry, Ethan Simpson, Chris Wright, Jordan Zimmerman

ASMFC Staff: Caitlin Starks, Samara Nehemiah, Katie Drew

Additional Attendees: Steve Arnott, Andre Lai

The Adaptive Resource Management (ARM) Subcommittee and the Delaware Bay Ecosystem Technical Committee (DBETC) met via webinar to review the most recent population estimates for horseshoe crabs and red knots, the harvest recommendations from the ARM for the 2026 fishing year and supporting horseshoe crab and red knot data sets. Below are the agenda items and summary of the committee's discussion and decisions.

1. Survey Results for 2024 Horseshoe Crab (Andre Lai, Francesco Ferretti)

Andre Lai presented the Virginia Tech (VT) Trawl Survey results for 2024. In 2024, for the Delaware Bay Area (DBA) mean stratified catch-per-tow values for immature females and males remained stable, consistent with patterns observed since 2016. Catch-per-tow of mature females and males decreased from their 2023 values, becoming more similar to abundance levels seen in earlier years. There continues to be a significant correlation between stratified mean catches of mature males and mature females, and immature males and females.

In 2024, the number of newly mature males showed a slight increase, following a sharp decline in 2023 from the higher levels observed in 2021 and 2022. Catch-per-tow of newly mature females showed a substantial rebound in 2024 after having declined sharply from 2019 to near-zero by 2023. This may be due to the change to the sampling protocol for this demographic group. Shortly after the 2024 survey season began, an adjustment to the sampling protocol was made in regard to the identification of newly mature females, as recommended by the ARM Subcommittee and DBETC in early August 2024. The vessel captain stated that in the last three years, not all subsampled ambiguous newly mature females were probed with an awl to check

for eggs. These tests occurred only when onboard logistics allowed, i.e., when the crew had sufficient time between one tow and the next. When probing could not be performed, the crew classified these crabs as female immatures. As such, it is possible that the low recorded catches of newly mature females in recent years were due to crew sampling error and may not be representative of their true abundance within the population.

Size-frequency distributions remain highly variable, and a trend of slight but detectable decreases over time has continued this year within the DBA. The rate of decrease is greatest for newly mature females, followed by mature females, mature males, and finally newly mature males. Overall, mature males were generally twice as common as mature females throughout the sampling period, although the mean-catch-per-tow sex ratio (M:F) for mature individuals increased substantially in 2023 and 2024.

Lower Delaware Bay was not sampled in 2024 due to poor weather conditions, crew health problems, and mechanical failure of the survey vessel late in the season. Sampling was also not completed in 2022 and 2023 due to rising costs and limited time.

The 2025 sampling season is currently underway.

2. Survey Results for 2024 Red Knots (Jim Lyons)

Jim Lyons presented the red knot stopover population estimate. The population estimate for red knots in 2024 is 54,044 birds (95% credible interval: 47,926 -61,928), which is an increase from 2023 (39,361 birds). There is broad overlap in the credible intervals for population estimates from 2020–2024, the population estimates are relatively stable. The 2025 red knot mark-resight data set included a total of 1,276 individual birds that were recorded at least once during mark-resight surveys at Delaware Bay in 2025, which is slightly lower than in 2024 (1,395) and the second lowest number of flagged individuals detected since 2011. Migration timing has remained consistent, with 50% of the population typically arriving by 18 May and no evidence of advancement since 2011. The majority of arrivals in 2024 occurred early in the season; by 21 May 2025, 84% of the stopover population was present, and only limited arrivals followed. The stopover population estimates in 2025 increased steadily from the beginning of the season and peaked around May 21. In 2025, departure probability was relatively low before May 21, then steadily increased to a peak near the end of the month, indicating steady turnover in the population after May 24. Stopover duration in 2025 was similar to 2024. Estimates from 2023-2025 suggest shorter stays than those from 2019–2021. The resight probability was relatively low for much of the season, and relatively low compared to most years since 2011.

DBETC and ARM Committee members asked why there are fewer individual tags being detected for red knots and whether something can be done to resolve this issue. It was noted that there has been a reallocation of flags from Delaware to New Jersey, and the issue of how to allocate efforts across New Jersey and Delaware to improve resighting rates should be discussed at the Delaware Bay coordination meeting. It was also suggested that there should be an analysis of

banding needs coastwide to ensure the needs of this model can continue to be met in the future.

3. Review of Supplementary Surveys for Horseshoe Crabs and Red Knots

a. NJ Ocean Trawl Survey (Danielle Dyson)

Danielle Dyson gave an overview of the NJ Ocean Trawl Survey. It was noted that no cruise occurred in October 2024. For April and August, the stratified arithmetic mean in numbers was 4.21 for females and 6.23 for males. This is consistent with the increasing trends in the male and female indices since 2010.

It was noted that there has been no sampling in 2025.

b. DE Bay 30 ft. Trawl Survey and Spawning Survey (Jordy Zimmerman)

Jordy Zimmerman reviewed the DE Bay 30ft Trawl Survey methods and sampling routine for horseshoe crabs. He noted no significant trends in the trawl survey indices. For the April-July index the 2024 geometric mean catch increased from 2023, and for all months it remained below the time series average similar to 2023. Staging of crabs caught in the surveys has occurred since 2017.

The spawning survey is used by the ARM for providing a sex ratio of males to females on the spawning beaches. Jordy noted that 13 of 240 sampling occasions (5%) were missed for 2024, which is a very low proportion for the time series. The abundance indices show positive trends over time and increased from 2021 to 2024. The Baywide female index shows a positive but not significant trend, while the Baywide male index shows a significant increasing trend. The proportion of females spawning in May was 70% for Delaware Beaches and 74% for New Jersey beaches. Peak spawning in 2024 occurred May 21 – May 25 (2nd lunar period) for both states.

c. Shorebird Monitoring

Kat Christie gave a summary of shorebird monitoring efforts in the Delaware Bay. She noted that to date most of the data from New Jersey have not yet been provided. Data collection has not been an issue on the Delaware side. However, only 7 red knot captures were made and 101 individuals resighted in 2025, which is well below average. The peak count was 25,667 red knots based on ground counts, and 16,335 based on the aerial counts. Aerial counts were lower than ground counts in 2025.

4. Review Results of ARM Model

The sections below summarize the committees' discussion on the ARM results. Details on the methods applied and the results themselves are provided in the memo to the Board from the ARM Subcommittee and DBETC dated October 10, 2025.

a. Results from 2021 ARM Framework Revision

Samara Nehemiah reviewed the annual process, results, and harvest recommendations for 2026 using the revised ARM Framework, which has been adopted for setting Delaware Bay specifications under Addendum VIII. The Virginia Tech Trawl Survey estimates are used in the CMSA along with the NJ Ocean Trawl and the DE Fish and Wildlife Adult Trawl (30') Surveys. All quantifiable sources of mortality (i.e., bait harvest, biomedical mortality, and commercial dead discards) were used in the CMSA to estimate male and female horseshoe crab population sizes. Public population estimates for horseshoe crabs were made using the coastwide biomedical data or no biomedical data, which provide upper and lower bounds. The exact harvest recommendation is based on the results using confidential biomedical data from the Delaware Bay region and cannot be publicly shared. The exact recommended male and female harvest levels are rounded down to the nearest 25,000 crabs to protect confidential data.

Using the CMSA model, there were approximately 30.1 million mature male and 19.4 million mature female horseshoe crabs in the Delaware Bay Region in 2024, assuming coastwide biomedical data. The Virginia Tech Trawl population estimates were 37.8 million male and 8.3 million female mature horseshoe crabs for comparison.

The 2024 red knot population estimate was 46,127 birds. The maximum possible harvest for both females and males are 210,000 and 500,000, respectively. The harvest recommendation based on the ARM Framework for 2026, using the gap-filling method recommended by the DBETC and ARM Committees, is 175,000 female and 500,000 male horseshoe crabs.

5. Board Recommendation

The ARM Subcommittee and DBETC recommend using the harvest recommendation from the revised ARM to set the Delaware Bay bait harvest specifications for 2026, or multi-year specifications for up to three years. This would result in harvest levels of 175,000 female and 500,000 male horseshoe crabs for 2026 only, or 500,000 males only for up to three years. The allocation methodology that would be used to distribute the Delaware Bay-origin quota amongst the states of New Jersey, Delaware, Maryland, and Virginia is specified in Addendum VIII.

6. Other Business

There was no additional discussion beyond the agenda items. No public comments were provided.