Atlantic States Marine Fisheries Commission

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

Call Summary

Tuesday, September 29, 2020
10:00 AM - 12:00 PM

Call Attendees Representing Each Committee:
Horseshoe Crab Adaptive Resource Management Subcommittee: John Sweka (Chair), Conor McGowan, Dave Smith, Henrietta Bellman, Jason Boucher, Jim Lyons, Larry Niles, Linda Barry, Sam Robinson, Steve Doctor, Wendy Walsh
Delaware Bay Ecosystem Technical Committee: Wendy Walsh (Chair), Adam Kenyon, Mandy Dey, Eric Hallerman, Henrietta Bellman, Jordy Zimmerman, Mike Millard, Steve Doctor
Horseshoe Crab Technical Committee Members: Jeff Brunson (Chair), Adam Kenyon, Catherine Fede, Claire Crowley, Derek Perry, Jeff Dobbs, Joanna Burger, Jordy Zimmerman, Mike Millard, Samantha MacQuesten, Steve Doctor
ASMFC Staff: Caitlin Starks, Kristen Anstead

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 results of the ARM for 2021, and supporting horseshoe crab and red knot data sets. Below are the agenda items and summary of the committees' discussion and decisions.

1. **Survey Results for 2019 Horseshoe Crab (Eric Hallerman)**

Eric presented the Virginia Tech Trawl Survey results for 2019. The survey began earlier than previous years due to predicted bad weather later in the sampling season. Overall, the population numbers were down in all stage groups in both the Delaware Bay Area and the Lower Delaware Bay. Mean prosomal widths have been declining throughout the time series.

The committees discussed the effects of timing in 2019 on the population estimates. Eric noted that the last few years have been active hurricane years which meant the survey had to begin earlier than previous years. Sampling early may mean that crabs have not left the nearshore waters to go offshore and therefore fewer crabs would be caught in the trawl, resulting in lower population estimates. Eric encouraged the committees to use the supplemental surveys in New Jersey and Delaware to compare results. Additionally, Kristen Anstead and John Sweka

are exploring index standardization so that the population estimates could be developed using covariates, such as temperature or sampling week. The standardized indices would be compared to the current delta indices and may provide an opportunity to control for the effect of covariates and potentially decrease error associated with population estimates.

The 2020 sampling season has just completed and the survey is funded through 2021. Additionally, Eric has hired a co-PI for the survey, Francesco Ferretti.

Last year during this meeting, the ARM and DBETC agreed that for running the ARM model each year, primiparous crabs should be included in the adult abundance estimates (from the swept area delta distribution values) and that half a year of the annual mortality from the assessment (0.274) should be applied to account for the ~6 month time lag between the survey and the spawning season when they interact with red knots. Therefore, the adult horseshoe crab abundance inputs for this year's ARM run is 4,666,785 females and 8,889,736 males.

2. **Survey Results for 2020 Red Knots (Jim Lyons)**

Jim presented the red knot stopover population estimate for 2020. Due to the pandemic, the field crews could not use volunteers and there were a smaller number of resightings than previous years. Population estimation was still possible despite fewer data points but there were some unusual patterns in the data. For example, the arrival probabilities showed that nearly 60% of the population was present at the beginning of the season, versus approximately 5% in past years. Very few of the birds that arrived early in the season remained in Delaware Bay which is also unusual, as usually there is a high chance of birds remaining in the area when they arrive early. Larry Niles and Mandy Dey agreed that it was an unusual year for birds; the birds left early and there were very cool waters in May with a couple of tropical storms that may have been a factor.

The estimate for red knots used in the ARM model is 40,444 birds for 2020.

3. **Review Results of ARM Model Run (Conor McGowan)**

Conor used the horseshoe crab and red knot abundance indices in the optimization matrix of the ARM model and determined that the harvest recommendation is harvest package 3, or 500,00 male-only harvest. He noted that both red knots and female horseshoe crabs are still below their population thresholds.

4. **Review of Supplementary Surveys for Horseshoe Crabs and Red Knots**
    a. **NJ Ocean Trawl Survey (Lindy Barry)**

Lindy showed the indices of relative abundance for horseshoe crabs from the New Jersey Ocean Trawl Survey. Since 2010, there has been an increasing trend through the terminal year of

2019. She noted that in 2019, the April cruise did not run but that the survey has not been heavily influenced by April's cruise since 2010. While Lindy showed the group several versions of the index (male-only, female-only, all crabs), the indices used in the stock assessment are the April and August cruises using a delta distribution.

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

Jordy reviewed the DE Bay 30ft Trawl Survey for male and female horseshoe crabs, as well as sexes combined. For the stock assessment, April-July months were included using the delta distribution and that index shows an increase in crabs since 2013 through 2019. The Delaware Bay spawning survey, which is used by the ARM for providing a sex ratio of males to females on the spawning beaches, recorded a sex ratio of 6.1:1 (male :female) in 2019, far exceeding the minimum threshold of 2:1 (male:female) required in the ARM.

c. Shorebird survey (Mandy Dey)

Mandy gave the committee an update on the status of red knots including the continued decline of red knots on the main wintering area in Tierra del Fuego and the peak abundance in Delaware Bay, which has been low and stable in past years but higher in 2018-2019.

5. Board Recommendation

The ARM Subcommittee and DBETC recommend harvest package 3, or 500,000 male-only harvest, for the Delaware Bay states for 2021.