

Horseshoe Crab Technical Committee Report

April 6, 2010

The Technical Committee (TC) met on April 6th primarily to review the benchmark stock assessment peer review conclusions and recommendations. The TC also reviewed North Carolina's quota transfer request. The meeting was held at the Renaissance Inn by the Philadelphia Airport. The following is a summary of the meeting.

Attendees

Technical Committee Members

Larry DeLancey (SC), Chair
Tiffany Black (FL)
Alicia Nelson (VA)
Jeff Brust (NJ)
Greg Breese (USFWS)
Stew Michels (DE)

Steve Doctor (MD)
Penny Howell (CT)
Linda Stehlik (NMFS)
Tina Moore (NC) [via phone]
Brad Spear (ASMFC), Staff

Stock Assessment Subcommittee Members

Dave Smith (USGS)
John Sweka (USFWS), Chair

Others

Rick Robins (HSC AP)
Allen Burgenson (HSC AP)
Dave Hata (VT)

Kristopher Whitney (UPenn)
Kevin Kalasz (DE)
Delaware Riverkeeper Representative

HSC Stock Assessment Peer Review Recommendations

Below the recommendations are paraphrased in italics followed by TC comments.

Improve characterization of catch to support the CSA. Maryland indicated they can work with the biomedical company Lonza to also record the stage of crabs during its sampling. Last year Virginia Tech created an illustrated manual to help determine stages of male and female crabs. ASMFC staff will send MD a copy of the manual.

Evaluate the value of various fishery-independent surveys. The TC agreed there is value in becoming more familiar with the surveys used in the ARIMA. It tasks the SAS to dive deeper into the raw data of the surveys to better understand them and possibly weight them relative to their value. This is not seen as the highest priority, but it is important nonetheless.

Use the Catch Survey Analysis (CSA) and perhaps drop the Surplus Production Model (SPM) when modeling HSC population dynamics of the Delaware Bay Region. The TC has concerns about both approaches. It recommended continued exploration and use of both models because they can provide insights. Dave Smith and John Sweka will be working with lead CSA modeler Rich Wong to improve the CSA for modeling Delaware Bay HSCs.

Develop plausible biological reference points. This is difficult because HSCs stop growing and never reach FMax. At least one reviewer saw promise in using a yield per recruit analysis, similar to lobster.

For the ARIMA, base empirical reference points on an estimated historical state. The TC agreed and suggested the SAS use a three-year average from the 80s or early 90s to determine reference points for the various fishery-independent surveys.

If practical, monitor presence (and proportion) of juvenile horseshoe crab in commercial catch. The catch of juveniles varies by state, season, and year. Delaware eel harvesters reported buying 'junk' crabs (i.e. small) which are usually juveniles. Maryland goes on about 12 trips per year to sample catch, so there is data available.

The stock assessment would benefit from a clearer definition of recruitment. The TC concluded that HSCs recruit to the fishery when they become adults. It did not believe that a clearer definition is necessary.

More assessment information on bycatch and discards in trawl and dredge fisheries would be useful, possibly via a sea sampling program. The TC agreed. MD has sea sampling data for other species caught in the HSC fishery. SC acknowledges that HSCs are caught in the shrimp trawl fishery, which has been reduced to about 1/3 of the effort it used to be. ACCSP might also serve as a data source in the future when its Bycatch Module is more populated with information. There are data available; the SAS will need to conduct analyses prior to the next assessment.

The following TC responses correspond to the numbered recommendations on pages 19-20 of the Peer Review TOR and Advisory Report:

Research/Assessment Using Existing Data

3. SAS plans to do this at some point.
4. Smith, Sweka, and Wong will be working on this.
5. SAS will continue to use the stage-structured model and may implement an MSE.
6. CT and MA have initiated a project to identify key habitat. DE is mapping the bottom of DE Bay, which will be helpful when it matches up with the 16' and 30' trawl surveys. Eventually, this can be used as a tool to help weed out fishery-independent surveys that are not useful.
7. This is similar to what the ARM Work Group is doing with the ARM. The question remains, how do you determine survival of age-0 HSCs.
8. The TC agreed this is very important. There are lots of data available and this should be pursued by the SAS.

Research/Assessment Requiring New Data

1. The CSA helps get at this but additional data and assessment would help. TC members suggested conducting a depletion study. Regardless of which path is chosen, it will require significant effort and funding. This survey and work would be secondary to the funding of the VT survey.
2. This is being looked into by VT this year.

3. The TC strongly supports this but funding is needed.

4. This too would require significant funding.

5. This is very important information to have, especially given the allocation decisions the Board makes. However, both approaches recommended have drawbacks. The tagging effort would necessarily be massive to gain the information desired. The TC questioned the value of more genetic work given that there is heavy mixing among populations which makes it difficult to see signals.

HSC Stock Boundaries Used in the Assessment

The TC agreed that stock boundaries in the assessment need to be more clearly defined. A problem arises when defining of the stocks as “New York” because the populations and fisheries of the south shore and Long Island Sound are very different. Members suggested using available tag/recapture and genetics data as well as fishery characteristics. The SAS should obtain the most recent USFWS tagging database information from Sheila Eyler to further analyze the data. The TC also suggested producing maps that clearly show the stock boundaries.

Horseshoe Crabs of Delaware Bay Origin

Stew Michels presented a first attempt at determining what percent of states’ (NY, NJ, DE, MD, VA) landings are crabs of Delaware Bay origin. He emphasized that the numbers represented the maximum possible crabs that could be from Delaware Bay. Tagging, sex ratio, and other data can be used to hone the numbers to the best estimates.

Virginia has sex ratio data that is not included in their compliance but could be helpful. The hand harvest crabs from Chincoteague Island appeared to not be included in VA’s numbers. Also, Virginia Tech’s Tom’s Cove research and tagging can help with a better estimate.

Maryland is seeing mostly crabs from Virginia origin showing up on their spawning beaches. The MD representative believed at most 20% of their crabs are of Delaware Bay origin. A more in depth look at the USFWS tagging database will help improve the estimate.

For NY, there should be a distinction between landings from the Atlantic coastal bays and the ocean. Again, tagging database information will be useful.

University of Delaware Alternative Bait Development

UDel researchers were invited to present their research to the TC, but were unable to attend. A summary of their work was provided from information in an email and from Stew Michel’s understanding of the project. It appears that the development research has reached its end. Funding is no longer available to support the research.

UDel has made significant progress in isolating the attractant in HSCs that conch are drawn to. However, the attractant still requires use of HSC to be produced. No synthetic attractant has been identified.

Dupont has partnered with UDel over the past few years to help them develop a matrix that holds that attractant and can be fished as bait like HSCs normally are. The company is in the process of developing a business plan to manufacture the matrix and sell them to fishermen. Dupont hopes

to move the project forward by passing the plan to a non-profit or other interested party. The TC wondered if the matrix with attractant package needs to be stored in refrigeration. If not, fishermen may also be interested in the matrix because it will help cut storage costs.

North Carolina Quota Transfer Request

Quota transfers are permitted under Addendum II. The process requires TC review and Board final approval. North Carolina originally requested a quota transfer from Maine. The TC had several concerns about the proposal, but above all asked NC to reconsider and seek a transfer of crabs from within its region. NC resubmitted its request with a proposed transfer from GA, a state that has not landed HSCs commercially for many years despite having quota available.

The TC recommends moving forward with NC's proposed transfer for the following reasons:

- The Pamlico Sound population appears to be stable or slightly increasing based on fishery-independent gill net survey data.
- The transfer would likely have no effect on the biomedical industry.
- No known HSC and shorebird interactions exist in NC.
- The transfer is expected to be a one-time deal.
- NC is in the process of developing and implementing regulations to reduce the chances of overages in the future.

Mortality on HSCs from Tagging

Penny Howell provided the TC with a white paper framing the discussion of whether mortality from tagging is an issue of concern. The TC agreed with Penny's conclusion. A study is planned this spring in Connecticut to further assess potential tagging mortality. An examination of the effects of tagging bled HSCs will be conducted in SC. Because it is widely believed HSCs experience a terminal molt, tagging after that molt is expected to result in negligible mortality. The TC added education and outreach are essential to explain the benefits of tagging to the public. Also, it is important to train individuals tagging HSCs with proper handling and tagging techniques.

Election of a Vice Chair

Penny Howell was elected by the TC to serve as Vice Chair.

Horseshoe Crab Fisheries in NY and MA

Based on the assessment and peer review, the TC identifies these two states as areas of concern. HSC abundance indices in these areas are declining. In addition, as restrictions in the Delaware Bay region continue, harvest pressure could continue mounting.

The TC encourages the Board to ask questions of or task the TC to monitor these populations.