Chesapeake Bay Stock Assessment Committee

Tuesday, September 6th, 2016
Conference Call/Webinar

1:00pm – 3:30pm

Meeting Summary

Meeting Participants

Joe Cimino – VMRC	John McConaugha – ODU
Ellen Cosby – PRFC	Tom Miller – UMCES-CBL
Glenn Davis – MDDNR	Amy Schueller – NOAA
Lynn Fegley – MDDNR	Mike Seebo – VIMS
Marty Gary – PRFC	Alexei Sharov – MDDNR
Dan Hennen – NOAA	Mike Wilberg – UMCES-CBL
Eric Johnson – UNF	Bruce Vogt – NOAA
Katie May Laumann – VMRC	Emilie Franke (staff) – ERT/NOAA
Rom Lipcius – VIMS	Kara Skipper (staff) – CRC

I. Male Hard Crab Minimum Size Limit

Objective: Per the request of the Fisheries Goal Team's Executive Committee, discuss the potential ecological impacts of an increased male minimum size limit. Determine if there are specific analyses that should be done to further address this question.

Materials:

- *Billy Rice letter*
- *PRFC letter*
- *Size Limit Past Discussions*
- *Size Frequency Distribution data (MD)*

Background:
In June 2016, Fisheries GIT Member Billy Rice (MD TFAC) submitted a letter to the Sustainable Fisheries GIT proposing a Baywide minimum size limit of 5.25" inches for male hard crabs. PRFC submitted also submitted a letter to the GIT supporting Billy Rice's proposal. The letters cite economic reasons, sustainability and consistency of regulations for enforcement as justification for a 5.25" male hard crab minimum size limit.

Currently, the minimum size limit for male hard crabs is 5" in Virginia waters (VMRC); 5.25" in the Potomac mainstem (PRFC); and split 5'' through mid-July and 5.25" after mid-July in Maryland waters (MDDNR).

A size limit increase was also proposed in 2006-07. PRFC approached the Maryland Tidal Fish Advisory Commission (TFAC) and the VMRC Crab Management Advisory Committee (CMAC) with a proposal to increase the male hard crab minimum size limit to 5.5" as a consistent

regulation in both the Potomac tributaries (MD/VA) and Potomac mainstem (PRFC). MD TFAC expressed initial concerns about the MD Potomac tributaries having a different size limit than the rest of MD waters. VA CMAC discussed the proposal in the context of all VA waters and raised questions about biological impacts to the blue crab population and concerns about the availability of larger male crabs in the lower Bay. It was later determined that hard crab size limits can only be changed through the Virginia State Code with legislation, while peeler size limits can be changed directly through VMRC.

Recent Publication

Mike W. is a coauthor of a 2015 publication *Management Evaluation for the Chesapeake Bay Blue Crab Fishery: An Integrated Bioeconomic Approach* (Huang et al. 2015)[1]. The study used a bioeconomic modeling approach combining two biological models and one economic model to simulate various management policies for the Chesapeake Bay blue crab fishery.

The study results showed that changing the male minimum size limit did not have a significant economic or biological impact. The decrease in available crabs for harvest was offset by a slight increase in price, so the results did not show a significant economic benefit. The biological model assumes that there is no potential for sperm limitation, so the results did not show a significant biological impact of having larger male crabs available to the population.

Discussion

CBSAC identified the following potential benefits, neutral/drawbacks and considerations for the proposed increase to a Baywide male minimum size limit of 5.25".

Benefits	*Neutral/Drawbacks*
• Consistency of regulation across the jurisdictions. • Response to stakeholder interest (if there is broad stakeholder support). • Provide more protection for mature males to reproduce. Benefit may not be significant; current minimum size limits already provide a protection buffer (5" is already larger than the average size of maturation). • Likely to result in some reduction in the male exploitation rate. May not be a significant reduction.	• No driving ecological factor and probably no substantial population increase. • Effects of an increased size limit will vary across regions. May have negative impacts in regions where the availability of larger crabs is already limited. Higher size limit would reduce harvest potential. (Ex: lower Eastern shore) • Would require legislation to change hard crab size limits in Virginia.

[1] Huang, P., R.T. Woodward, M.J. Wilberg, & D. Tomberlin. 2015. Management Evaluation for the Chesapeake Bay Blue Crab Fishery: An Integrated Bioeconomic Approach. North American Journal Of Fisheries Management 35(2): 216-228.

Questions/Considerations

- Are the current differing regulations across jurisdictions a challenge for enforcement?
- The biological impact of increasing the size limit would be difficult to quantify. We currently do not have the analytical framework to do this type of analysis.
- The male exploitation fraction would most likely decrease by some amount (unless effort increases), but the specific decrease would be difficult to quantify.
    - Male exploitation rates are currently below the current male management trigger adopted by CBSAC in 2014.
    - An initial analysis of the % decrease in male exploitation rate was started in 2006-07 for a 5.5" size limit, but the analysis did not consider density-dependent population effects and changes across multiple seasons/years. Likely produced an inflated estimate.
- Any conservation benefit would vary spatially depending on size distribution in different regions.
- More localized markets and price changes are important to consider. This is outside CBSAC's expertise.

Additional Discussion Notes

Size differences

- Could size distributions be different in certain areas due to gear differences?
    - Bigger crabs in MD rivers where only trotlines are used (no pots and no cull rings)
    - Likely only a short-term effect. Effects of fishing gear would not carry over to future year-classes.
- Size frequency data are not available for Virginia. VMRC is conducting initial fishery-dependent sampling of commercial harvest in 2017.

Other ecosystem factors – climate change

- Growth rates may increase because overwintering time would reduce, life cycle would turn over faster.
- Size regulations would have more of an effect than climate change.

II. Latent Effort Analysis

Objective: Review the work started by Glenn Davis and Joe Cimino to analyze effort and abundance data to evaluate potential impacts of latent effort. Does the amount of effort in the fishery change when the population of blue crabs rises or falls?

- Materials: *Slides*

Maryland

- In general, there are a lot of unused (inactive) licenses in Maryland.
    - Families tend to hold multiple licenses.
- LCC license (mainly used for trotlines and scrapes, allows for 50 pots) is the most popular license type.
- % active licenses remained between 40-60% since 1996 except from 2008-2010 when 60-80% of licenses reported catch.

    - Higher reporting rate due to reporting issues that began in 2008. Also influenced by 2009-2011 license buyback program.
- The # active licenses reporting seemed to coincide with an increase in Baywide abundance in 2009-2011, but Versar estimates of deployed pots from 2008-2011 were very different from the # of reported pots.
    - Using Versar estimates, there is a very weak correlation between blue crab abundance and # of pots deployed.

Virginia

- % of active licenses in VA has remained relatively steady since 2006 (~40%).
- Also had a license buyback program in 2009.
- Weak relationship between blue crab abundance and # of active harvesters.
- If # harvesters potentially increased in different scenarios, the total harvest would not be significantly different.
- Behavioral observation: years with an early warm spring saw much higher # of harvesters in March than colder years.

Discussion

- Effort is inherently difficult to quantify.
- PRFC data will be added to this analysis and reviewed at the next CBSAC meeting.
- Application to management
    - If latent effort had a significant impact, this anticipated impact could be quantified and incorporated as a buffer in harvest projections.
- Economic drivers
    - Changes in price and market may also drive latent effort. Ex: more effort when prices are higher.
    - This analysis could be done at a finer regional scale in the future.
    - What are the impacts from markets in other states?

Conclusion

Based on this initial analysis, there is little evidence that effort changes in response to changes in blue crab abundance. Latent effort has not had a significant impact on the fishery in recent years and seems unlikely to have a significant impact in the near future. CBSAC will review similar data and analysis from PRFC on a future CBSAC call, and this analysis discussion will be incorporated at some level in the next Advisory Report.

III. CBSAC Priorities

Objective: Identify CBSAC's priorities from now until the next Advisory Report period (April 2017). Materials: *2016 Blue Crab Advisory Report*

Winter Meeting (date TBD)

CBSAC members identified the following topics for a winter CBSAC meeting.

- Update on recent management priorities and activity from each jurisdiction to keep CBSAC members informed.
- Discussion on how/if uncertainty should be reported with exploitation rate data.
- Discussion on how/if recruitment could be considered in management decisions and/or the control rule.