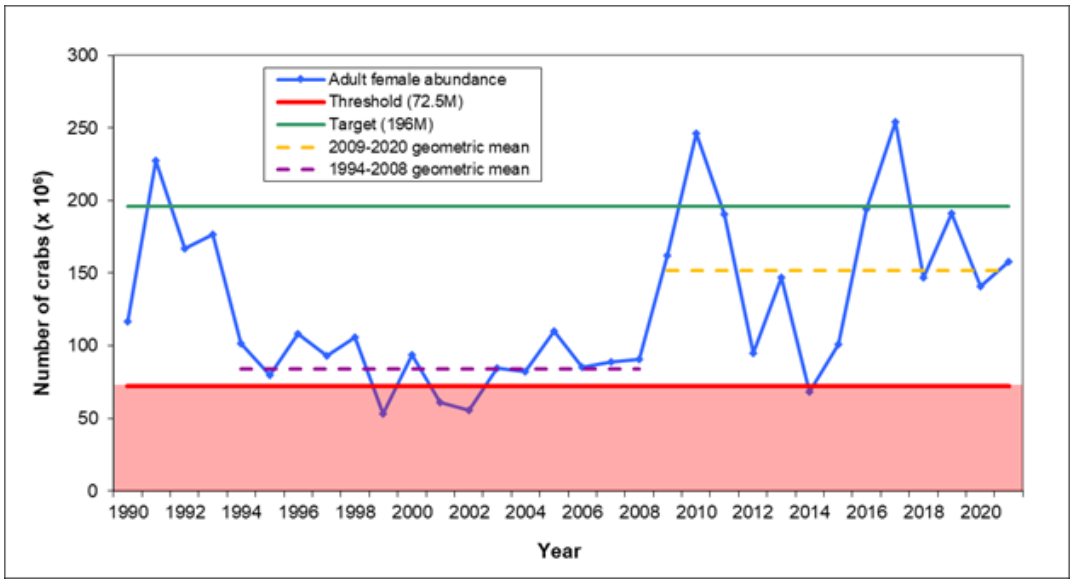
Blue Crab Abundance Outcome - November 18, 2021

ABSTRACT: The Blue Crab Abundance Outcome is on track to meet its goal by 2025. The Winter Dredge Survey results continue to show adult female abundances above the management threshold, indicating that the current management framework is working. The Chesapeake Bay Stock Assessment Committee (CBSAC) has continued to prioritize research that will improve the blue crab stock assessment model to ensure that the best available science is used to effectively manage the population. Funding for this additional analytical work, however, remains an issue. In addition to funding for analysis, development of a blue crab harvest reporting document (Action 1.3) also identified challenges in obtaining accurate catch data for population estimates due to a lack of jurisdiction resources. In November 2020, the jurisdictions formally adopted the revised reference points from the 2017 stock assessment update. Over the next two years, CBSAC will develop a protocol for future reference point updates to ensure that the blue crab population is managed using the best available science.

NOTE: The narrative analysis summarizes the findings of the logic and action plan and serves as the bridge between the pre-quarterly logic and action plan and the quarterly progress meeting presentation. After the quarterly progress meeting, your responses to these questions will guide your updates to your logic and action plan. Additional guidance can be found on ChesapeakeDecisions.

1. Are we, as a partnership, making progress at a rate that is necessary to achieve this outcome? Use a graph or chart to illustrate where feasible (replace example provided with your illustration).

The graph below is a time series of abundance for mature adult female blue crabs in Chesapeake Bay relative to the revised female-specific reference points adopted by managers in November 2020. This graph represents the progress that has been made in maintaining a sustainable blue crab population and suggests that the current female-specific management framework is working. The dashed lines represent the geometric mean of female abundance during two time periods: 2009-2021, after the current management framework was implemented (yellow dashes); and 1994-2008, the period of low abundance which prompted the management changes (purple dashes). Since female-specific management was implemented in 2008, abundance of mature females has increased and remained above the threshold (or at the threshold in 2014), and even surpassed the target in 2010 and 2017.



2. Looking back over the last two or more years, describe any scientific (including the impacts of climate change), fiscal, and policy-related developments that impacted your progress or may influence your work over the next two years. Have these resulted in revised needs (*e.g.*, less, more) to achieve the outcome?

*To the extent feasible, describe your needs using the SPURR thought model, i.e., **S**pecific and actionable, **P**rogrammatic partner, **U**rgency of the needed action, **R**isk of not acting, **R**esources required.*

CBSAC's needs remain largely unchanged from the previous SRS cycle. The blue crab science needs focus on research that will improve the stock assessment model, particularly identifying and characterizing model uncertainty and bias. While members of CBSAC have the analytical skills to conduct this work, funding remains an issue. The SFGIT requested GIT funding for a population simulation project in 2020 that would potentially inform model improvements, but the project was rejected due to its single-outcome focus. This is an ongoing issue as the blue crab outcome is focused on management of a single, yet critical, species in the Bay. The SFGIT has put forward the population simulation project for GIT funding again in 2021 as CBSAC has determined the study to be the highest priority for blue crab management. CBSAC and the blue crab outcome would benefit from additional funding options for these single-outcome projects.

In addition to improving the stock assessment model, CBSAC has also prioritized the need for more accurate harvest reporting. Development of a blue crab harvest reporting document in the recent SRS cycle (Action 1.3) has identified a lack of jurisdiction resources as the primary barrier to implementing and maintaining programs (e.g. electronic reporting with monitoring) that will improve the efficiency and accuracy of blue crab harvest reporting. This challenge will be difficult to address considering that each jurisdiction would require long-term funding to maintain such programs.

In 2020, the jurisdictions adopted new management reference points for female blue crabs from the 2017 stock assessment update, having determined that the revised reference points represent the best available science by which the population should be managed. This was the first time that the reference points have been updated since female-specific management was implemented in 2008.

In the next SRS cycle, CBSAC will develop a standard protocol for future updates to the reference points to ensure that the process is scientifically sound.

3. Based on the red/yellow/green analysis of the actions described in your logic and action plan, summarize what you have learned over the past two years of implementation.

Summarize overall (not per action) what you have learned about what worked and what didn't work. For example, have you identified additional factors to consider or filled an information gap?

Overall, CBSAC has done a good job of completing actions that pertain to the committee's role in analyzing blue crab survey data and providing science-based recommendations to management. These are actions that CBSAC fulfills every year. However, CBSAC has struggled with completing extraneous actions that require additional time and resources, with little immediate benefit to management. Although we tried to emphasize high priorities when developing the previous Logic & Action Plan to ensure that actions were feasible and would be completed in a timely manner, this was still an issue. A large part of the problem is that CBSAC is searching for ways to improve (or prepare to improve) the stock assessment model and analytical process that do not require additional funding because the blue crab science needs typically do not meet GIT funding criteria. Because these actions are more mundane and not immediately useful (e.g. document of methods and previous efforts), CBSAC members are hesitant to volunteer for them and they do not get completed.

4. Based on what you have learned through this process and any new developments or considerations described in response to question #2, how will your work change over the next two years? If we need to accelerate progress towards achieving our outcome, what steps are needed and, in particular, what specific actions or needs are beyond the ability of your group to meet and, therefore, you need the assistance of the Management Board to achieve?

Describe any adaptations that may be necessary to achieve your outcome more efficiently and explain how these changes might lead you to adjust your Management Strategy (if significant) or the actions described in column four of your Logic & Action Plan. What new science, fiscal, and policy-related information, could be recommended or pursued over the next two years to maintain or, if needed, accelerate progress? Use the SPURR model described in question #2, to provide detail to the needed steps and actions.

The overarching goal of CBSAC over the next two years will continue to be providing the best available science to the management jurisdictions. Specifically, the next Logic & Action Plan will again focus on high priority scientific and analytical needs to improve the stock assessment model and parameters. Otherwise, CBSAC will function as usual, analyzing and discussing the results of the Winter Dredge Survey and developing the annual Blue Crab Advisory Report.

To ensure success in achieving the Blue Crab Abundance Outcome, we ask that the Management Board continue to support science and research needs for blue crab management and stock assessment. In terms of funding CBSAC's prioritized science needs, the majority of the work is done in-house (e.g. Winter Dredge Survey data analysis, stock assessment modeling); however, some of these needs require additional funding due to the analytical capacity and time necessary for completion. For these cases, we ask the Management Board to take into consideration the uniqueness of the Blue Crab Outcome when developing GIT funding criteria (particularly the cross-outcome focus) and to provide endorsement for these projects in the GIT funding process and

other grant programs that may address blue crab science needs . Many of the science needs for this outcome focus on fisheries analysis and management, and are therefore not relatable to other outcomes as required by the current GIT funding criteria. Thus, the current GIT funding process may preclude some of the pressing analytical questions CBSAC has in working toward improving the blue crab stock assessment model.

5. What steps are you taking, or do you recommend, to ensure your actions and work will be equitably distributed and focused in geographic areas and communities that have been underserved in the past?

The Blue Crab Abundance Outcome is focused on maintaining a sustainable fishery throughout the Chesapeake Bay, and because of this focus on management, jurisdictions do not typically work with specific geographic areas or communities (other than crabbers, in general). However, CBSAC has considered broadening its membership to include scientists from other universities (besides UMCES and VIMS) who may provide insight to blue crab issues in other specific locales. In addition to broadening membership, CBSAC is interested in providing opportunities for students and early-career professionals to participate in meetings and shadow fisheries scientists on the committee to gain experience in the field. CBSAC is also planning to include DEIJ considerations in future Logic & Action Plans and work in general.