



**Blue Crab Abundance Outcome – 2020-2021**

**Long-term Target:** Maintain a sustainable blue crab population based on a target of 215 million adult females.

**Two-year Target:** Improve/maintain the effectiveness of the blue crab stock assessment model for management and continue to communicate the status of the blue crab population and fishery to managers and the public.

**Instructions:** Before your quarterly progress meeting, provide the status of individual actions in the table below using this color key.

Action has been completed or is moving forward as planned.

Action has encountered minor obstacles.

Action has not been taken or has encountered a serious barrier.

Additional instructions for completing or updating your logic and action plan can be found on [ChesapeakeDecisions](#).

Factor	Current Efforts	Gap	Actions	Metrics	Expected Response and Application	Learn/Adapt
<i>What is impacting our ability to achieve our outcome?</i>	<i>What current efforts are addressing this factor?</i>	<i>What further efforts or information are needed to fully address this factor?</i>	<i>What actions are essential (to help fill this gap) to achieve our outcome?</i>	<i>What will we measure or observe to determine progress in filling identified gap?</i>	<i>How and when do we expect these actions to address the identified gap? How might that affect our work going forward?</i>	<i>What did we learn from taking this action? How will this lesson impact our work?</i>

<p><b>Scientific and Technical Understanding:</b></p> <p>Lack an understanding of the effects of environmental variability, habitat, and fishery conditions on blue crab population dynamics and catchability.</p> <p>Sources of uncertainty and bias need to be identified, reconciled, and/or represented effectively in the stock assessment. Ensuring use of the best available data and analytical methods can address these issues and improve the stock assessment model and results.</p>	<p>UMCES study examined the effects of environmental factors on blue crab abundance and recruitment.</p> <p>Annual WDS provides population estimates.</p> <p>Paired-tow comparison data are collected to examine gear efficiency.</p> <p>MDNR implemented an e-reporting system to verify catch and increase accountability.</p> <p>MDNR conducted a stock assessment update in 2017.</p> <p>CBSAC funded a benchmark stock assessment in 2011, led by UMCES.</p>	<p>Continue to collect paired-tow data to fully evaluate the gear efficiency discrepancy between MD and VA and correct for bias.</p> <p>Identify harvest reporting options and barriers to implementation in each jurisdiction.</p> <p>Document previous efforts to analyze the effects of environment on catchability to determine next steps.</p> <p>Increase understanding of catch composition by size and sex.</p> <p>Continue to evaluate the best data and analytical methods for blue crab stock assessment.</p>	<p><b>1.2</b> Improve our understanding of catchability effects on blue crab abundance estimates.</p>	<p>Improvement or continued effectiveness of the blue crab stock assessment model for management.</p>	<p>Continual assessment of our analytical methods, fisheries surveys, and available data is necessary to ensure that we are using the best-possible stock assessment model and appropriately managing the blue crab fishery with respect to our long-term outcome. Understanding environmental effects, catchability, and catch composition is particularly critical to prepare for future benchmark stock assessments.</p>	<p><b>1.2</b> Documentation of catchability effects was not completed.</p> <p>CBSAC has again struggled to get GIT funding for priority projects given single-outcome focus. Other potential funding sources need to be identified.</p> <p>CBSAC developed a plan for annual paired tows to examine gear efficiency differences between MD and VA surveys which can inform corrections in the assessment model. Analysis of these paired tow data need to be considered in future assessments and/or LAPs.</p>
			<p><b>1.3</b> Improve harvest reporting and characterization of catch composition.</p>			<p><b>1.3</b> Identified funding and staff resources as a major barrier to harvest reporting program implementation and enforcement. Long-term funding is necessary to improve harvest reporting.</p>
			<p><b>1.4</b> Evaluate fisheries surveys, indices, and analytical models to determine the best approaches for blue crab stock assessment.</p>			<p><b>1.4</b> Documentation of survey methodologies was not completed. The evaluation of WDS indices is still in progress.</p>

<p><b>Public, Nongovernmental Organization, and Government Agency Engagement:</b></p> <p>Communicating the status of the Chesapeake Bay blue crab population and fishery is key to ensuring public understanding of regulations and investment in a healthy population.</p> <p>Communicating results of blue crab research and identifying applications ensures that the best available science is used to inform management.</p>	<p>The Blue Crab Advisory Report is published annually to share WDS results and the current population estimate as well as CBSAC's recommendations to managers.</p> <p>Results of the UMCES ecosystem study were shared with CBSAC and the Fish GIT.</p>	<p>Continue to conduct the WDS, data analysis, and advisory report to update the state of the blue crab population and fishery each year.</p> <p>Continue to collaborate with the Fish GIT, fisheries managers, and other CBP workgroups to identify applications of research results for management and cross-cutting indicator development.</p>	<p><b>1.1</b> Analyze the Winter Dredge Survey results and develop the annual Blue Crab Advisory Report.</p>	<p>Continued awareness of the status of the blue crab population and fishery.</p>	<p>Management responds to the status of the blue crab fishery/population with appropriate actions.</p> <p>The Blue Crab Advisory Report summarizes the status of the blue crab fishery/population for the public and jurisdictions each year.</p>	<p><b>1.1</b> Management jurisdictions used the results of the WDS to inform regulation changes for the upcoming crabbing season. This will continue to be the primary role of CBSAC. Results of the stock assessment update led to revised management reference points. CBSAC is planning to develop an SOP for updating reference points in the future.</p>
			<p><b>2.1</b> Investigate applications of the blue crab ecosystem study results to management and other cross-outcome priorities.</p>	<p>Improvement or continued effectiveness of the blue crab stock assessment model for management.</p>	<p>Understanding how environmental factors affect blue crab population dynamics is an important component of the stock assessment model. CBSAC is interested in identifying approaches to incorporate these study results into the model.</p>	<p><b>2.1</b> CBSAC determined that the current framework is working without incorporating the ecosystem study results into the assessment model. However, the results have helped identify and prioritize forage and climate indicators, and demonstrated the importance of environmental factors in blue crab recruitment success and stock abundance.</p>

**ACTIONS – 2020-2021**

Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
<b>Management Approach 1: Planning and implementing the benchmark stock assessment.</b>					
<b>1.1</b>	Analyze the Winter Dredge Survey results and develop the annual Blue Crab Advisory Report.	Conduct the annual Winter Dredge Survey.	MDNR, VIMS	Baywide	December – March 2019-2020 December – March 2020-2021
		Analyze results of the Winter Dredge Survey and develop management recommendations.	MDNR, VIMS, CBSAC	Baywide	March – May 2020 March – May 2021
		Conduct the annual stock assessment update and develop recommendations on the effectiveness of the current model as a tool for blue crab management.	MDNR, CBSAC	Baywide	March – May 2020 March – May 2021
		Develop and distribute the annual Blue Crab Advisory Report, including results of the stock assessment update, to managers and the public.	CBSAC	Baywide	June – July 2020 June – July 2021
<b>1.2</b>	Improve our understanding of catchability effects on blue crab abundance estimates.	Document previous efforts to examine the effects of habitat and depth on catchability and evaluate options for next steps.	CBSAC	Baywide	Winter 2021
		Evaluate potential for GIT/CBT to fund analytical study of environmental effects on catchability.	NCBO, CBSAC	Baywide	Spring 2021
		Conduct annual paired-tow comparisons to evaluate gear efficiency differences between the MD and VA Winter Dredge Surveys.	MDNR, VIMS	Baywide	December – March 2019-2020 December – March 2020-2021
<b>1.3</b>	Improve harvest reporting and characterization of catch composition.	Evaluate current harvest reporting efforts, provide recommendations to jurisdictions, and identify barriers to implementation.	CBSAC	Baywide	Spring 2021

		Compile and summarize existing catch composition data and survey efforts for a future benchmark stock assessment, and provide recommendations for such surveys to PRFC and VMRC.	MDNR, CBSAC	Baywide	Winter 2021
1.4	Evaluate current indices and analytical models to determine the best approaches for blue crab stock assessment.	Document the methodology of the fishery-independent trawl surveys, compare and standardize indices, and provide recommendations on the most appropriate indices for stock assessment.	CBSAC	Baywide	Spring 2021
		Evaluate the efficacy of the Winter Dredge Survey as an index of abundance and determine the best analytical approach for blue crab stock assessment.	UMCES	Baywide	Fall 2020
<b>Management Approach 2: Cross-outcome collaboration and multiple benefits.</b>					
2.1	Investigate applications of the blue crab ecosystem study results to management and other cross-outcome priorities.	Present and discuss the ecosystem study results at a CBSAC meeting.	UMCES	Baywide	Winter 2020
		Identify and evaluate options for incorporating the ecosystem study results into the current management framework.	CBSAC	Baywide	Spring 2021
		Advise CRWG on relevant climate indicators associated with blue crab abundance and recruitment.	NCBO, Climate Resiliency Work Group	Baywide	Fall 2020
		Advise FAT on relevant forage indicators associated with blue crab abundance.	NCBO, Forage Action Team	Baywide	Fall 2021