Logic & Action Plan: Post-Quarterly Progress Meeting

Blue Crab Abundance Outcome – 2022-2023

Long-term Target: Maintain a sustainable blue crab population based on the management target for adult female abundance.
Two-year Target: Increase understanding of blue crab population dynamics, improve/maintain the effectiveness of the blue crab stock assessment model for management, and continue to communicate the blue crab stock status 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
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential (to help fill this gap) to achieve our outcome?*	*What will we measure or observe to determine progress in filling identified gap?*	*How and when do we expect these actions to address the identified gap? How might that affect our work going forward?*	*What did we learn from taking this action? How will this lesson impact our work?*

Partner Coordination and Public Engagement: Partner coordination is necessary to identify, prioritize, and address science needs, including the need for a benchmark stock assessment. Communicating results of blue crab research and identifying applications ensures that the best available science is used to inform management. 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.	CBSAC holds meetings to discuss priority science needs, WDS results, and the blue crab stock status. New blue crab research is shared with CBSAC and the SFGIT at CBSAC meetings and SFGIT Biannual Meetings. The Blue Crab Advisory Report is published annually to publicly share WDS results and the current stock status as well as CBSAC's recommendations to managers.	Continue to discuss, evaluate, and update priority blue crab science needs, including a benchmark stock assessment. Continue to collaborate with the SFGIT, fisheries managers, and other CBP workgroups to identify applications of research results for management and cross-outcome indicator development. Continue to conduct the WDS, data analysis, and advisory report to update the state of the blue crab population and fishery each year.	**1.1** Analyze the Winter Dredge Survey results and develop the annual Blue Crab Advisory Report.	Continued awareness of the status of the blue crab population and fishery.	The Blue Crab Advisory Report summarizes the status of the blue crab fishery/population for the public and jurisdictions each year. Management responds to the status of the blue crab fishery/population with appropriate actions as needed.	
			3.1 Conduct research that examines relationships between, and primary drivers of, blue crab abundance, recruitment, and other important aspects of population dynamics. Share results with relevant stakeholders and interested parties.	Continued evolution of the blue crab science needs in STAR's SSRF database as needs are addressed and new ones are identified and/or prioritized.	Understanding how environmental and ecological 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 assessment.	
Scientific and Technical Understanding: Lacking understanding of the stock-recruit relationship, quantitative impacts of environmental and ecological factors on blue crab population dynamics, and the primary drivers of	UMCES study examined the effects of environmental factors on blue crab abundance and recruitment. CBSAC funded a benchmark stock assessment in 2011, led by UMCES.	Identify and address research questions about the primary drivers of blue crab population dynamics and interannual variability. Continue to collect paired-tow data to fully evaluate the gear efficiency discrepancy	**2.1** Improve understanding of catchability and gear effects on blue crab abundance estimates.	Improvement or continued effectiveness of the blue crab stock assessment model for management.	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	

interannual variability in the population. Sources of uncertainty and bias (e.g., mortality estimates, catchability, gear effects) 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.	MDNR conducted a stock assessment update in 2017. Annual WDS provides population estimates. Paired-tow comparison data are collected to examine gear efficiency. MDNR is conducting annual stock assessment updates to evaluate model performance. MDNR implemented an e-reporting system to improve harvest reporting and verify catch. CBSAC developed a blue crab harvest reporting document to outline all current efforts and barriers to program implementation and maintenance. PRFC is conducting a pilot e-reporting program in 2022-2023. VMRC is evaluating resources necessary to implement a similar program. CBSAC received FY21 GIT funding for a blue crab population	between MD and VA and correct for bias. Identify and/or allocate funding for implementation and maintenance of e-reporting programs, including monitoring. Synthesize results of previous efforts to examine habitat and environmental effects on catchability to determine next steps. Increase understanding of catch composition by size and sex. Cooperative data collection programs should be implemented and standardized across the Bay to incorporate these data into the stock assessment. Develop an SOP for future updates to the management reference points. Continue to evaluate the best data and analytical methods for blue crab stock assessment.	**2.2** Improve harvest reporting and characterization of catch composition. **2.3** Evaluate blue crab indices and analytical models to ensure that the best approaches are used for stock assessment, including updates to the management reference points.		long-term outcome. Understanding environmental effects, catchability, and catch composition is particularly critical to prepare for future benchmark stock assessments.	

	simulation modeling project. UMCES is evaluating the efficacy of the WDS as an index of abundance. CBSAC adopted new management reference points in 2020 based on results of the 2017 stock assessment update. MDNR's Cooperative Data Collection Program collects voluntary catch composition data.		**3.1** Conduct research that examines relationships between, and primary drivers of, blue crab abundance, recruitment, and other important aspects of population dynamics. Share results with relevant stakeholders and interested parties.	Continued evolution of the blue crab science needs in STAR's SSRF database as needs are addressed and new ones are identified and/or prioritized. Improvement or continued effectiveness of the blue crab stock assessment model for management.	Understanding how environmental and ecological 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 assessment.	

ACTIONS – 2022-2023					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
Management Approach 1: Assess blue crab stock status and communicate the results to managers and the public.					
1.1	Analyze the Winter Dredge Survey results and develop the annual Blue Crab Advisory Report.	Conduct the annual Winter Dredge Survey.	MDNR, VIMS	Bay-wide	December – March 2021-2022 December – March 2022-2023
		Analyze and review the Winter Dredge Survey results and develop management recommendations.	MDNR, VIMS, CBSAC	Bay-wide	March – May 2022 March – May 2023
		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	Bay-wide	March – May 2022 March – May 2023
		Develop and distribute the annual Blue Crab Advisory Report to managers and the public.	CBSAC Lead: Mandy Bromilow	Bay-wide	June – July 2022 June – July 2023
Management Approach 2: Evaluate and improve the effectiveness of the blue crab stock assessment model.					
2.1	Improve understanding of catchability and gear effects on blue crab abundance estimates.	Synthesize results of previous efforts to examine habitat and environmental effects on catchability and evaluate options for next steps.	CBSAC Lead: Mike Wilberg	Bay-wide	Fall 2022
		Conduct annual paired-tow comparisons to evaluate gear efficiency differences between the MD and VA Winter Dredge Surveys.	MDNR, VIMS	Bay-wide	December – March 2021-2022 December – March 2022-2023
2.2	Improve harvest reporting and characterization of catch composition.	Conduct a pilot electronic reporting program and continue to pursue additional funding for program maintenance.	PRFC	Potomac River	Fall 2023

		Develop goals and recommendations for standardized cooperative fisheries data collection programs across the Bay, and identify the necessary resources to implement such programs at VMRC and PRFC.	CBSAC, VMRC, PRFC Lead: Glenn Davis	Bay-wide	Spring 2023
2.3	Evaluate blue crab indices and analytical models to ensure that the best approaches are used for stock assessment, including updates to the management reference points.	Advise the GIT-funded blue crab population simulation modeling project and use the results to evaluate the stock assessment model.	CBSAC	Bay-wide	July 2022 – December 2023
		Develop a standard operating procedure for updating the management reference points.	CBSAC Lead: Pat Geer	Bay-wide	Winter 2022
		Identify all available blue crab indices in the Bay and develop a plan to: (1) compare and standardize the indices; and (2) determine the best indices and approaches for stock assessment.	CBSAC Leads: Rom Lipcius, Tom Miller	Bay-wide	Summer 2023
		Evaluate the efficacy of the Winter Dredge Survey as an index of abundance.	UMCES, CBSAC Lead: Tom Miller	Bay-wide	Fall 2022
Management Approach 3: Identify and address priority blue crab science needs.					
3.1	Conduct research that examines relationships between, and primary drivers of, blue crab abundance, recruitment, and other important aspects of population dynamics. Share results with relevant stakeholders and interested parties.	Review and update priority blue crab science needs and estimate costs of completion.	CBSAC	Bay-wide	February 2022
		Plan and conduct a blue crab science workshop to discuss priority science needs and the utility of a new benchmark stock assessment. The jurisdictions should identify potential Terms of Reference prior to the workshop to help guide the discussion.	CBSAC, CBP, VMRC, MDNR, PRFC	Bay-wide	Fall 2022
		Present results of the blue crab science workshop and other relevant research to the Fish GIT.	CBSAC	Bay-wide	Summer 2023
		Advise the Forage Action Team on relevant indicators associated with blue crab abundance and recruitment.	NCBO, CBSAC, FAT	Bay-wide	Ongoing