Chesapeake Bay Program

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Sustainable Fisheries Goal Implementation Team (Fisheries GIT) Response to BlueCrab Abundance Management Board Request

This document summarizes the Fisheries GIT's response to requested management board actions from the Fall 2021 Aquatic Life cohort quarterly progress meeting. The Blue Crab Abundance follow-up action was written as follows:

"The Chesapeake Bay Stock Assessment Committee (CBSAC) will report back to the Management Board on: a) their highest priority blue crab research, assessment, and workshop needs and timelines in order to achieve the Blue Crab Outcome. Included in this evaluation should be CBSAC's recommendation on the value of conducting a new blue crab benchmark stock assessment; and b) estimated costs and recommended jurisdictional contributions for each of the above including a new blue crab benchmark stock assessment (if recommended)."

The spreadsheet below lists the CBSAC's updated highest priority blue crab research and science needs. The highlighted needs are those that would directly evaluate (and potentially improve) the stock assessment model, and could be conducted as part of a benchmark stock assessment. As a caveat, the list below is not exhaustive or finalized. The Fisheries GIT will conduct a blue crab science workshop to explore the need for an updated benchmark stock assessment and related research in the fall of 2022.

Questions can be directed to the Fisheries GIT coordinator, Bruce Vogt (bruce.vogt@noaa.gov), or CBSAC coordinator, Mandy Bromilow (mandy.bromilow@noaa.gov).

Purpose: This list represents CBSAC's highest science priorities needed to address knowledge gaps in blue crab population dynamics and to improve stock assessment for fisheries management. The highlighted needs are those that would directly evaluate (and potentially improve) the stock assessment model, and could be conducted as part of a benchmark stock assessment using existing data sources. The remaining needs are those that would require additional data collection, scientific analyses, and/or partner coordination in order to be useful for management. This list was completed in February 2022 and is part of an ongoing effort to track CBSAC's science needs to achieve the Blue Crab Abundane Outcome. These needs may change as new data and other information become available.

Science Need	In STAR Database?
Evaluate models for fishery-independent indices (e.g., GAM, GLMM, GLM) to identify the most appropriate form and standardize index development.	Yes
Investigate potential applications of existing fishery-independent data sets (e.g., environmental effects on catchability, seasonal and sex-specific distributions)	Yes
Investigate the effect of alternative forms of the sex-specific stock-recruitment relationship on productivity and biological reference points.	No
Investigate the influence of male abundance on population/fishery productivity and the utility of male-specific reference points.	No
Evaluate possible assessment models that operate on finer time/spatial scales and incorporate season- and sex-specific growth/mortality.	No
Evaluate the efficacy of the WDS as an index of abundance and compare to trawl survey estimates.	Yes
Investigate the model's poor fit to the sex-specific catch and abundance indices, including evaluation of higher male natural mortality and higher proportion of recruiting females as reasons.	Yes

Characterize uncertainty in assessment estimates.	No
Improve accountability and reporting for commercial and recreational harvest.	Yes
Evaluate the effects of environmental factors on blue crab abundance and recruitment.	Yes
Improve characterization of catch composition and effort using fishery-dependent sampling.	Yes
Examine differences in gear efficiency between Maryland and Virginia WDS.	Yes
Improve documentation of the sex ratio and the effect of shedding mortality on reported harvest in the peeler/soft crab fishery.	Yes
Develop a blue crab data hub.	Yes