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Methodology Development for Appropriate Male Blue Crab Reference Points in Chesapeake Bay

In 2009, the NOAA Chesapeake Bay Office (NCBO) in coordination with the state of Maryland and commonwealth of Virginia initiated completion of a benchmark stock assessment for blue crab in Chesapeake Bay. In early 2011, the benchmark assessment was completed and delivered to the NCBO which organized a Center for Independent Experts peer review. Upon acceptance by the peer review team and subsequent review by the Chesapeake Bay Stock Assessment committee (CBSAC), the CBSAC recommended that the jurisdictions adopt the female-specific target and threshold reference points that were developed.

The CBSAC recommended that the jurisdictions place primary management focus on managing for the female-specific target exploitation fraction. If the annual exploitation fraction is, on average, equal to the target of 25.5%, the assessment model predicts that female abundance should vary around the target level of 215 million crabs. However, given the uncertainty in this component of the model, jurisdictions should focus primarily on the exploitation fraction when deliberating on management strategies, as long as the abundance of age-1+ female crabs does not depart widely from the target.

In addition, the CBSAC recommended that, for the next one or two years, stock status be updated against both the current (sex-combined) and recommended (female-specific) framework in order to assess changes in the performance of the male fishery and to fully monitor the transition from the current management framework to the recommended female-only control rule. This will also allow the management jurisdictions to fully evaluate the performance of the female-specific management framework.

To ensure that male reproductive capacity is not compromised in the face of female conservation measures, CBSAC recommended maintaining current male conservation measures such as size limits for all fisheries. Size limits are important in that they ensure that males have an opportunity to mate prior to being harvested. These conservation measures should remain in place until properly defined reference points for the male population of blue crabs can be determined.

Workshop SOW – May/June 2012

In order to ensure that male abundance does not drop below a critical level relative to female abundance, the CBSAC recommends development of threshold reference points for male crabs that would provide management with a trigger for male conservation. One possibility to explore is a ratio of male to female abundance which could be derived from annual winter dredge survey results. In order to properly define a threshold based on an abundance ratio, several key analytical issues need to be addressed, and the results of ongoing research on crab reproductive biology need to be reviewed.

Key issues include:

- Estimation procedures of winter dredge survey gear efficiency;
- Estimation of winter dredge survey gear selectivity for differing sizes of crabs;
- Crab reproductive biology (sperm limitation);
- Estimation procedures for over-wintering mortality.

It is envisioned that this workshop will be held in conjunction with the spring CBSAC meeting to reduce travel for out-of-region staff (particularly NEFSC and SEFSC members). The CBSAC meeting would encompass the better part of a 3-day time frame which would encompass a workshop setting for development of male blue crab reference points as well as completion of the 2012 Annual Blue Crab Advisory Report.

This timeframe follows the plan established by adoption of the 2011 CBSAC Advisory Report.

Funding for this workshop would be supported through the Chesapeake Research Consortium (CRC) – with the workshop/meeting being held in Annapolis.