



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: American Lobster Management Board

FROM: Jonah Crab Technical Committee

DATE: July 19, 2021

SUBJECT: Jonah crab pre-assessment report and Technical Committee recommendations

Background

The Atlantic States Marine Fisheries Commission (ASMFC) approved the Jonah crab Fishery Management Plan (FMP) in August of 2015. The impetus of the FMP was a group of industry members that formed a fisheries improvement project (FIP) and requested ASMFC take on the management of Jonah crab. The FIP was concerned that questions over sustainability and lack of management would hinder the market for Jonah crab. While management is now in place, the sustainability of the fishery is still unknown. Jonah crab landings increased rapidly starting in the mid-2000s. Coastwide landings, which averaged 4.8 million pounds from 1997 to 1999, have since quadrupled to an average of 20.1 million pounds from 2017 to 2019. Canadian Jonah crab assessments – where similar landings trajectories were observed – have suggested that non-science-based catch measures used to manage Jonah crab were not sustainable. To date there has been no stock assessment of US Jonah crab, stock status is unknown, and there has been limited science-based advice available to support management of Jonah crab fisheries.

The Jonah Crab Technical Committee (TC) met in August 2017 to review research projects and discuss data limitations. This review identified limitations on understanding of basic life history processes, but also identified several ongoing projects that could help fill some information gaps in coming years. The TC met again in April 2020 to review ongoing research as well as regular agency monitoring efforts. During this meeting, the TC recommended a more in-depth review of available data to better understand limitations and identify stock assessment approaches that could be supported with available data. Subsequently, the American Lobster Management Board (Board) tasked the TC in August 2020 with conducting a pre-assessment workshop for Jonah crab and providing a report on available data and recommended assessment approaches. Webinars were held November 16-18, 2020, February 11, 2021, June 3, 2021, and June 29, 2021 to review and discuss available Jonah crab data sets, potential assessment approaches, and remaining data limitations. From these discussions the TC produced a Jonah Crab Pre-Assessment Data Workshop Report (hereafter, report). This memo outlines a recommendation on near-term Jonah crab stock assessment and potential assessment approaches. More detailed information on available data and assessment approaches can be found in the report included in the meeting materials.

Recommendation on Jonah Crab Stock Assessment Schedule

The TC recommends moving forward with a stock assessment to be completed in 2023, consistent with current Northeast Region Coordinating Council and ASMFC assessment schedules. Given the data available, steady increase in landings as the fishery has developed, the precedent set by Canadian fisheries for risks of managing Jonah crab without science-based guidance, and persistent uncertainty about sustainability and market limitations, the TC believes that conducting a near-term stock

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assessment would be worthwhile. A near-term assessment could help answer questions about the status and sustainability of the resource and provide more information with which to manage the fishery in a shorter timeframe. Additionally, it could identify data needs beyond those identified during the pre-assessment data workshop, which if addressed, could help strengthen future assessments.

Potential Stock Assessment Approaches

Jonah crab should be considered a data poor species, which will limit the types of approaches that can be used for assessment. Below are the most likely assessment approaches that could be utilized in a near-term assessment, including outputs and examples of other ASMFC-managed species that have been assessed with the approach. Several additional approaches are discussed in the report, but these approaches are less likely to be useful for a near-term assessment due to potential assumption violations or data limitations.

- ***Stock Indicators***

Stock indicators are simple, empirical time series analyses that do not require assumptions typical of population dynamics models. These indicators can be used in a framework to provide a categorical characterization of stock conditions to complement stock status estimates from other assessment approaches and/or pre-defined triggers for management responses.

Outputs: Annual indicator values relative to time period-based reference values

Examples of other ASMFC-managed species assessed with these approaches: American lobster (categorical characterization of stock conditions to complement stock status estimates from other assessment approaches), spot and Atlantic croaker (pre-defined triggers for management responses)

- ***Index-Based Methods***

These assessment approaches include a number of methods that utilize indices of abundance to provide stock status based on an ad hoc, historical time period (e.g., ARIMA) or catch-based management advice (e.g., PlanB). Performance of several of these methods when natural mortality is misspecified or annual catch data is incomplete, two areas of uncertainty facing Jonah crab assessment, was recently evaluated through a research track assessment conducted by the NEFSC (Legault et al. 2020). The assessment found two groups of methods tend to perform best dependent on the condition of the stock (i.e., favorable or unfavorable) for groundfish species and could be useful for short-term management advice while working towards advice from models that account for size/age structure of the stock.

Outputs: Stock status based on an ad hoc, historical time period or sustainable catch levels

Examples of other ASMFC-managed species assessed with these approaches: Horseshoe crab (stock status based on an ad hoc, historical time period)