Mid-Atlantic Fishery Management Council
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MEMORANDUM

Date: October 28, 2019

To: File

From: Jason Didden, Paul Rago

Subject: *Illex* Workgroup Summary

Working group (WG) attendees: Jason Didden (co-chair), Paul Rago (co-chair), Anna Mercer, Ben Galuardi, Doug Christel, Kim Hyde, Lisa Hendrickson, Peter Hughes, Sarah Gaichas, and Wendy Gabriel. Joris VanWoerkom, Russ Brown, and Eric Reid also participated.

The working group met on October 11, 2019 to discuss input on the group's terms of reference (TOR) as provided by the Atlantic Mackerel, Squid, and Butterfish (MSB) Advisory Panel (AP), the Scientific and Statistical Committee (SSC), and the Council.

The meeting began with a presentation by Joris VanWoerkom of CATSAT describing the kinds of oceanographic and meteorological data CATSAT provides to fishermen. The presentation offered potential insights for working with industry to identify potential predictors of fishing success. The group discussed the possibility of retrospectively investigating environmental relationships for earlier years, and possibly by considering study fleet information (or observer trips) to investigate fleet behavior and the overall extent of preferred habitat. The group noted that there are other providers and databases that may provide comparable information (possibly at less cost). The group would like to know what services the *Illex* fleet is using more broadly, and would like to catalog the available options. The group was also interested in what underlying oceanographic models CATSAT is using.

The group then discussed input received from the AP, SSC, and at the October 2019 Council Meeting.

Multiple inputs have emphasized the need to have greater industry involvement and there was general concurrence among workgroup members. After the meeting, Council staff consulted with the Council Executive Director, and in the future the MSB AP will convene jointly with the working group. It was noted that multiple working group members had been invited to, and will participate in, the upcoming industry-sponsored *Illex* meeting in late November 2019. The Council may also be able to sponsor a subsequent workshop to integrate additional industry input in evaluation of approaches to determine optimal *Illex* quotas.

The working group reviewed the comments provided by Eric Reid at the October 2019 Council meeting:

1. Repopulate working group with industry given TOR intro and the SSC comments re need for deep participation (Staff note: the AP is going to meet jointly with workgroup from now on)
2. Include analysis of current management by Mid and NE and NE Monument - existing protected areas/refugia will allow escapement
3. CPUE needs to be considered at the vessel level (not just type) (Staff note: current CPUE measure development is focusing on vessel level analyses)
4. Gulfstream and eddies need to be considered – see https://link.springer.com/article/10.1007/BF00042919
5. Look at MSC doc for *Illex* weight/length info (observer data): https://cert.msc.org/FileLoader/FileLinkDownload.asmx/GetFile?encryptedKey=CoSN13z4nOgnJPOiR2IoAFj5CGlfDfAdcq3+e4n6V1yDFkfjzhBGKQUzsVjM7y5f
6. This is a perfect fishery for RSA - preseason industry survey - see FAO 376 1998 270-272 http://www.fao.org/3/w9000e/w9000e00.htm
7. Review Theresa Johnson's paper on the previous *Illex* effort (already distributed).
8. Consider South Atlantic's Citizen Science Program
9. Acoustics needs industry split-bean multi frequency (also good for RSA)
10. RE availability: consider percent of area swept by US fleet vs all habitat in terms of what's not being accessed
11. Need to include cannibalism in stock dynamics analyses
12. Study fleet is producing relevant data we are not using.
13. What is the definition of feasibility as used in the TORs?
14. Fecundity is extremely difficult because they don't achieve peak maturity until right before they spawn.

The group then focused on the TOR for the WG. The TOR as refined seem reasonable and potentially productive, but some flexibility will be needed – early findings are likely to influence other endeavors. We began with the general perspective that we need individuals to commit to certain tasks and develop some timelines for products. We had a high level of commitment and it was noted that some tasks may ultimately rely on the success of grant proposals or securing additional staff support. We'll need to revisit these commitments in the coming weeks.

Short Term (ST) (By April 28, 2020)

ST-1…Review squid assessment and management approaches: Lisa and Jason will take the lead on this. Jason will initiate and run a first draft by Lisa for review, and then distribute for the larger group.

ST-2… List key existing available data sources: This has a lot of parts. Lisa will summarize the primary databases commonly used in stock assessments such as the survey, VTR, dealer, port samples etc, and include a summary of data from biological samples obtained from industry since the late 1990's. Anna will summarize the study fleet data and collaborate with Lisa on the relevant observer data. Doug will summarize information from the data visioning project. We probably need a higher level summary focused on relevance to *Illex*. Ben offered to summarize the information content and flow for the real-time estimates of catch. We didn't explicitly address the

available environmental data but noted that study fleet vessels do regularly record temperature. A broader summary of existing satellite or oceanographic data might be something Kim could do (need to confirm). Doug will review processes for accessing confidential data. There was a discussion about where the information would be catalogued. A report, posted on the Council website is a likely location for the summary data, and a shared drive would be useful for development. Jason will work on setting up a shared drive for document storage/development/communication.

ST-3…Lisa will summarize our knowledge about *Illex* growth: This will include the primary literature, previous assessments, and information from recent observer, dockside sampling, and industry-provided (Seafreeze) data regarding average length trends (and weights if available for Seafreeze data) within and across recent fishing seasons.

ST-4…2019 biological information from industry-provided samples: We should get some contemporary data on size and age in early 2020. Sample delivery is being arranged and contracts have been set up for the basic biological sampling. Jason has lead.

ST-5…Identify/develop meaningful CPUE measures: In addition to the points made above, we noted the complex array of factors that influence effort dynamics and therefore CPUE (ST-6). Doug, Lisa, and Anna will collaborate on ways to identify those factors and improve our understanding of CPUE. We noted important differences among fleets and at even finer scales of vessel differences. It may be possible to obtain additional information via the AP. Lisa is going to meet with Eric Reid regarding vessel characteristics, and then that information can be reviewed by a larger group later. Processing limitations, including processor-imposed trip limits will be examined. Development of CPUE measures will be beginning before the November Industry workshop, but may be informed by the November Industry Workshop.

ST-6…Evaluate CPUE relative to depletion: This is dependent on completion of ST-5. Paul/Lisa leads. Cooperative research post-doc may have relevant experience.

ST-7…NAFO: Lisa, Doug, and Jason will address the potential implications of the NAFO assessment. Doug will focus on the policy aspects, Jason and Lisa on the scientific.

Medium-Term (MT) (By April 2021)

MT-1…Pre/Mid/Post-season surveys: We didn't discuss this much except to note that a survey was conducted in the late 1990's and that such methodology may be useful for future surveys.

MT-2…Details on in-season dynamics: We noted that inclusion of additional economics expertise (possibly John Walden at NEFSC) would be valuable. In addition to gear configuration and processing capacity, it was noted that trip limits within the industry and variations among years may be important. Anna noted that a pending contract hire should bring additional expertise on these issues. We also noted that the Industry-sponsored summit will complement issues related to this TOR and may provide insights.

MT-3…CPUE and environmental parameters: Kim noted that she had a proposal to support a post doc to summarize these types of data and will know by the end of the month about funding. Lisa noted that she is working with an oceanographer to investigate environmental relationships. Lisa will provide a summary of their key findings, but it is a work in progress. Ben also volunteered to help with oceanographic analyses.

Long-Term (LT)

LT-1 to LT-7…We didn't spend much time on these except for LT-1 regarding acoustic methods. It was noted that much progress had been made technologically, but the absence of target strength studies may ultimately hamper the utility of this approach for assessment. On LT-2 it was noted that some MSE like analyses may be useful for evaluating the fine-scale kinetics of information flow and the utility of subsequent decisions.

Some members of the work group will participate in the Industry Summit in November. Although the time did not work for everyone, Ben, Doug, Anna, Sarah and Paul are likely attendees.

The WG agreed that we would all go back to our cells and begin working on the tasks outlined above. Bilateral exchanges among members were encouraged. To improve our ability to participate in the Industry Summit, we would likely plan another webinar by mid-November to review progress.