



Preliminary *Illex* Specifications 2023

Aug 2022

Overview

- Stock status
- Current primary measures
- Fishery Performance/AP Report
- SSC Recommendation
- Monitoring Committee

Outcome: 2023 Specifications

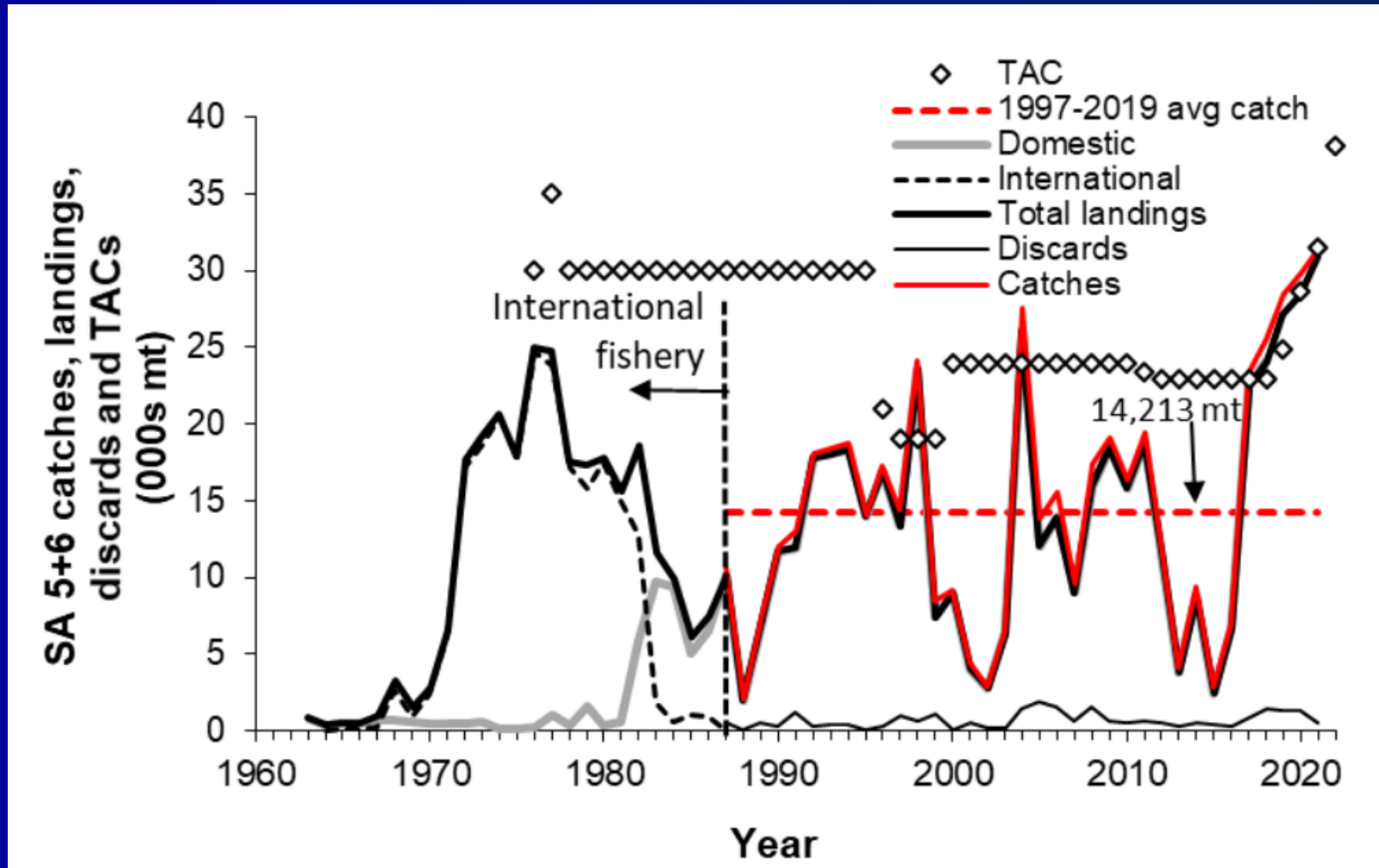
Stock status

- Research Track (RT) Assessment
 - No management track assessment
 - RT failed to produce biological reference points
 - Peer review agreed likely “lightly fished in 2019,” though with cautious caveats
- Indirect methods used @ SSC to support recent increase to 40,000 MT ABC for 2022
 - Will be updated for March 2023 SSC meeting

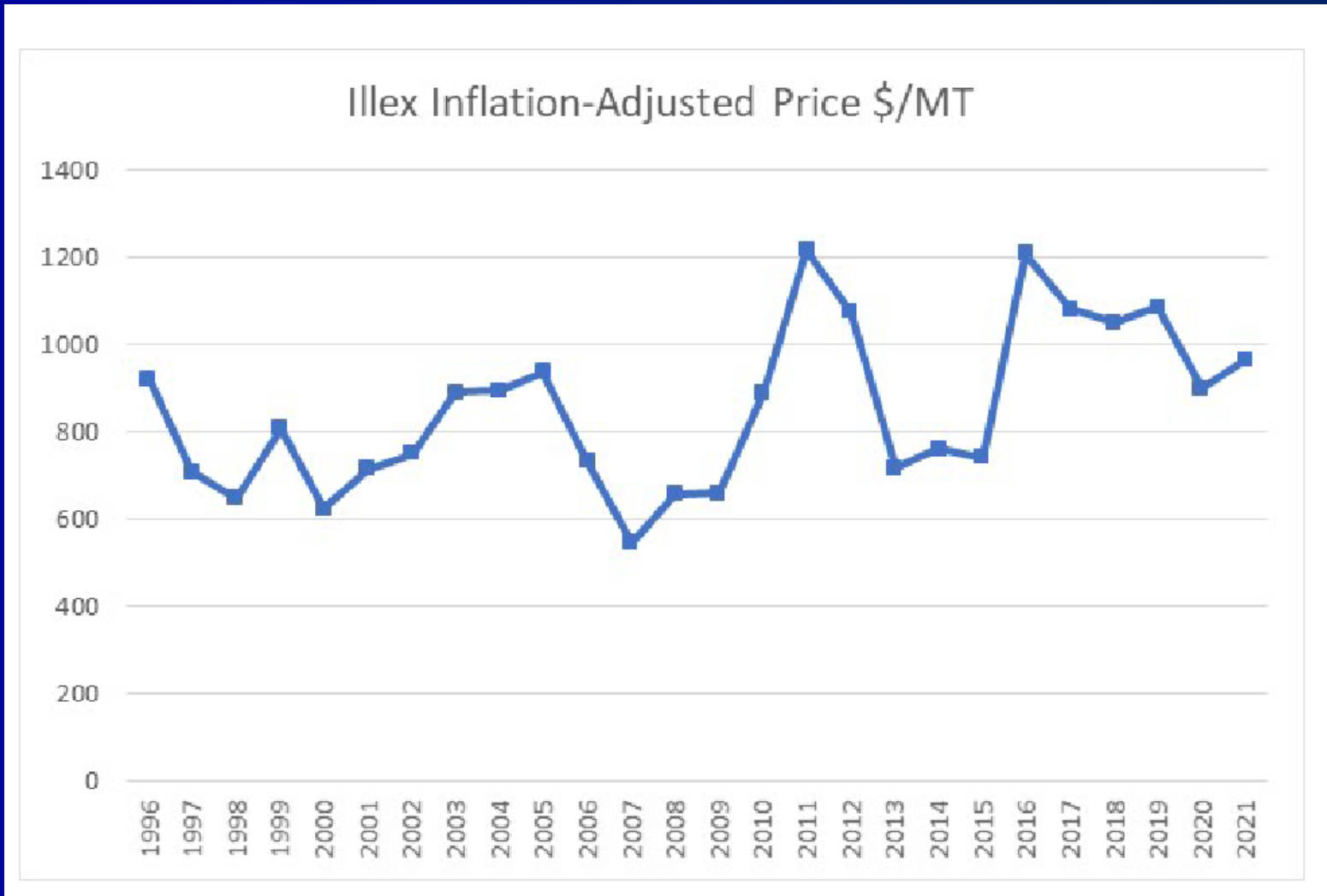
Current primary measures

- Limited access
- Small amount set-aside for discards
- Closure at 96% of quota (new)
- 2022 ABC = 40,000 MT (new)
- 2022 Quota = 38,156 MT (new)

Fishery Performance/AP Report

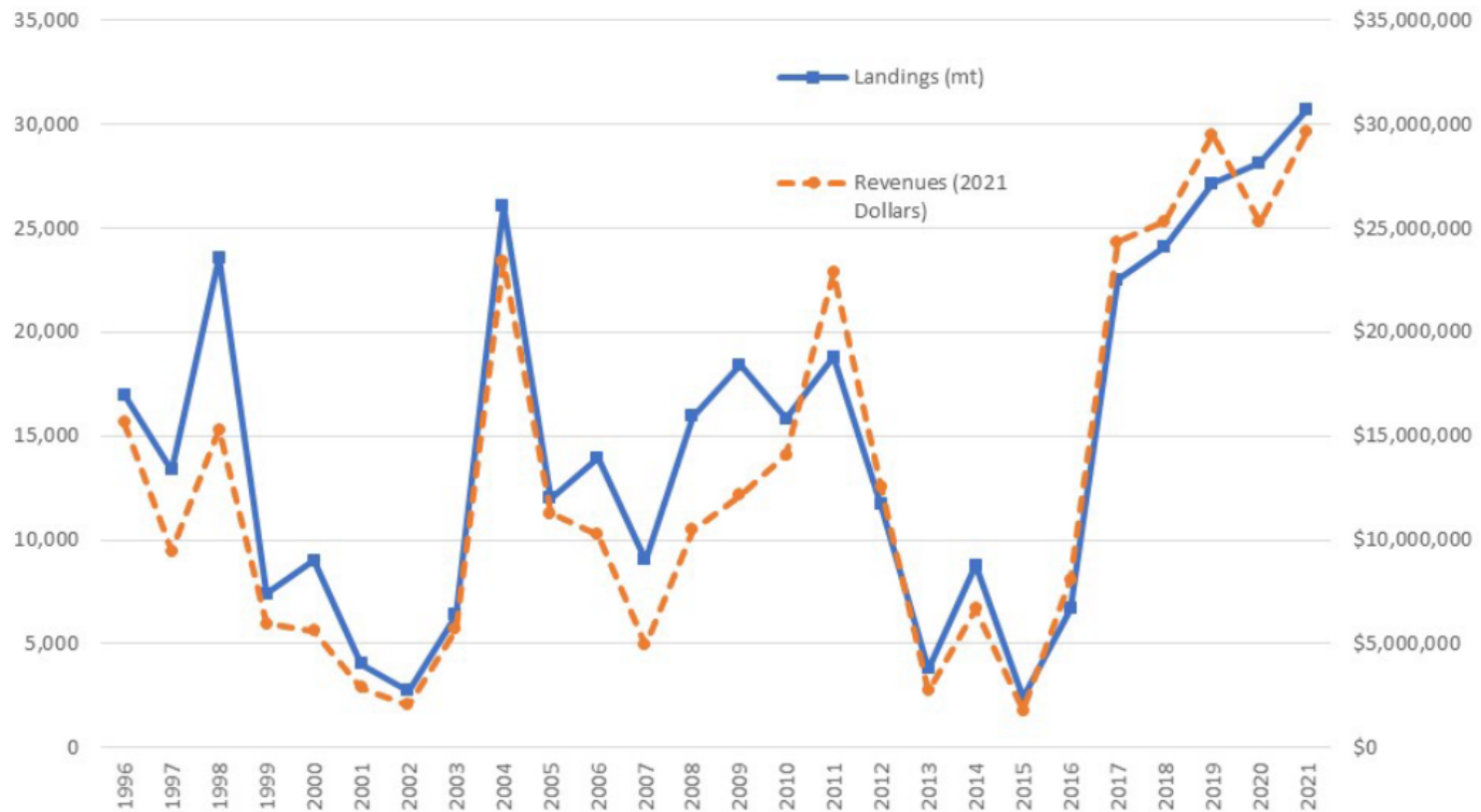


Fishery Performance/AP Report



Fishery Performance/AP Report

Illex Landings (MT, left and solid blue line) and Ex-Vessel Revenues (2021 dollars, right and dashed orange line) 1996-2021



Fishery Performance Report

- Market conditions/prices similar in 2021 as 2020 - “stable”
- +7% price increase = +3 cents/pound
- world market dominates price - U.S. landings are a small component
- FAO has 2019 Argentine shortfin squid =
~ 250,000 MT

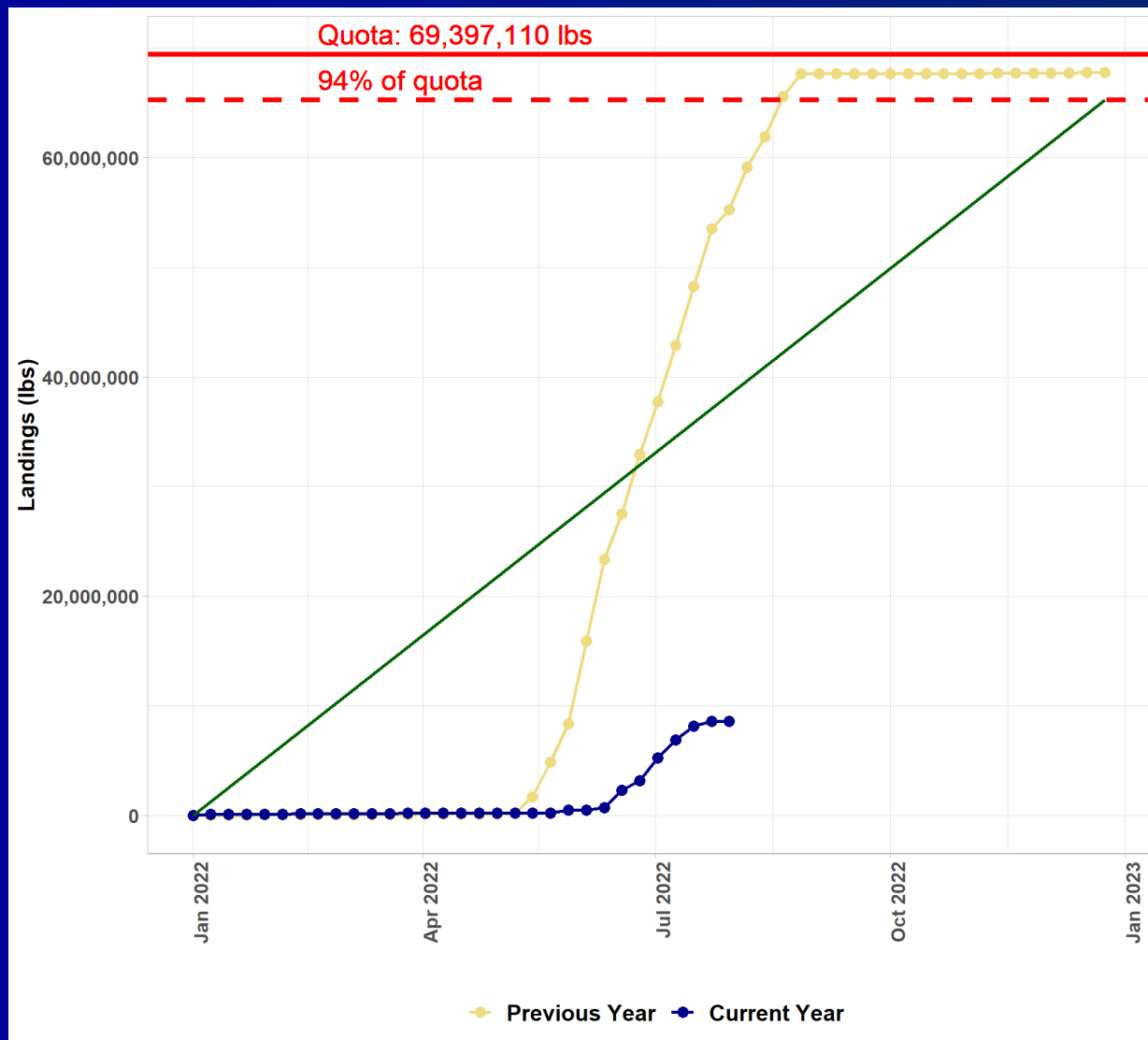
Fishery Performance Report

- Continue to involve fishermen in work to understand environmental linkages
- Opposing perspectives RE: how/whether SSC/Council should consider role of *Illex* in the food web as related to the strategic plan and Ecosystem Approaches to Fishery Management Guidance Document

Fishery Performance Report Supplement

- Lower 2022 *Illex* landings are result of good longfin fishing and high fuel prices
- Lower early summer water temperatures and lack of warm core rings
- *Illex* ABC low versus skates
 - 47,000 MT quota more reasonable

Fishery Performance Report Supplement

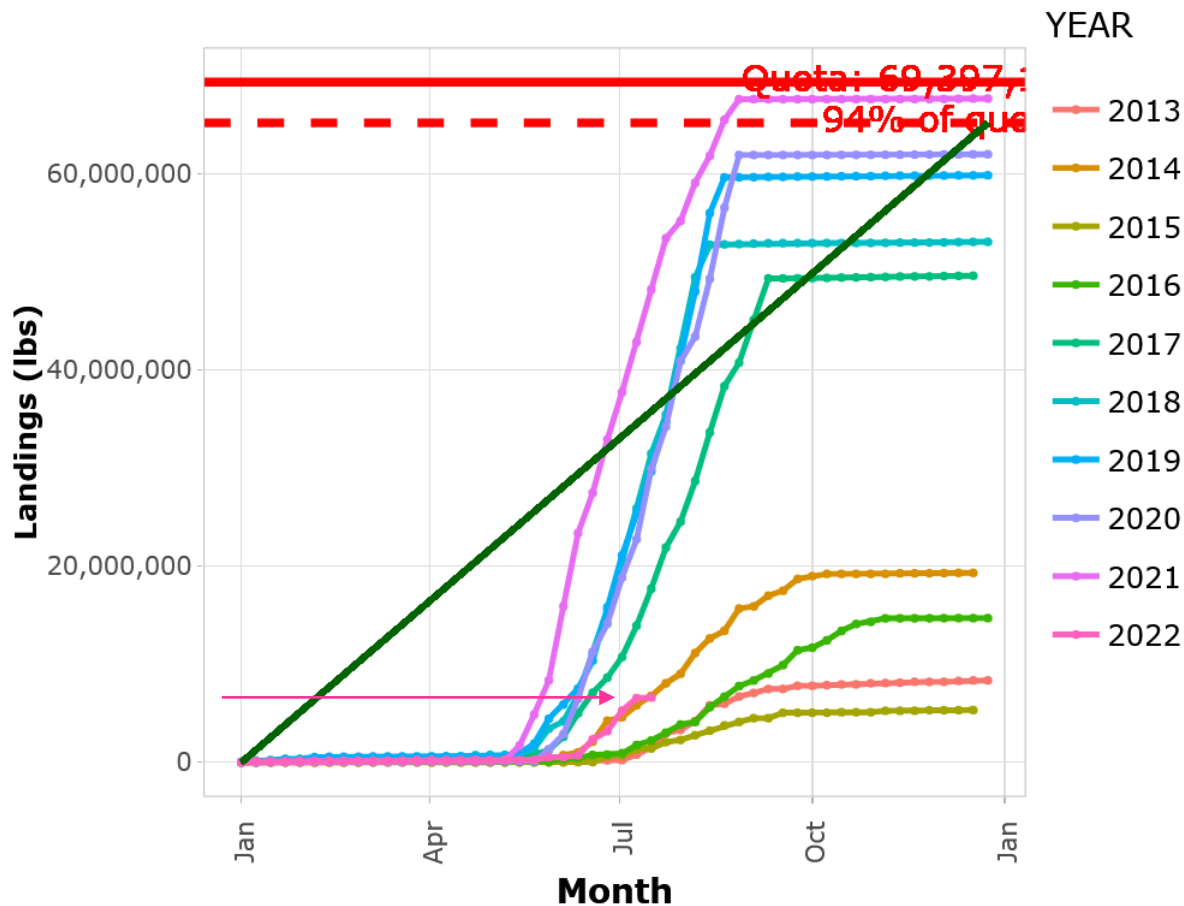


Fishery Performance Report Supplement

Multi-year Illex QM

Daniel Hocking

2022-07-19



SSC Recommendation

TOR #1: Illex Specifications 2023

- The SSC received an update on the key findings of the Research Track Assessment (RTA) review panel. Attempts to develop a new stock assessment model were not successful and no biological reference points could be specified.
- In the meantime the SSC will continue to base its ABC recommendations on a risk analysis of escapement estimates based on the Councils Risk Policy and candidate reference points used in other squid fisheries. The current ABC has about a 5% chance of exceeding the $F=2/3 M$ generic guidance for data poor species. Model suggests greater than 50% escapement.
- **The SSC recommended continuation of the 2022 ABC of 40,000 mt (approved in March 2022) for 2023.**
- **In March 2023 the SSC will receive an update of this analysis using data through 2022 and potentially revise this recommendation.**

SSC Recommendation

SSC Comments on RTA (1)

- A generalized depletion model (GDM) was attempted, but its reliance on strong assumptions and weekly data led to its rejection for assessment advice. Increased frequency of data (daily rather than weekly), and alternative model parameterizations may be helpful in future applications. Importantly, simulation testing using realistic assumptions about migration of *Illex* into and out of the survey area should be investigated. The CIE reviewers, however, were not unanimous in their recommendations for future work on the GDM.
- The Plan B smooth approach was not recommended given the limited support for autocorrelation in indices and the multiple generations of *Illex* that occur between annual survey estimates.

SSC Recommendation

SSC Comments on RTA (2)

- Valuable information on *Illex* ageing was obtained via seasonal biological sampling supported by industry and the Council. See summary in SSC report from its May 9-10, 2022 meeting,
- An ensemble approach of multiple models, which examine the range of abundance estimates over likely ranges of catchability, availability, and natural mortality, was recommended as an interim approach for providing catch advice. These methods have been considered by the SSC in its derivation of ABCs for 2020 to 2022.
- RTA Reviewers recommended a Management Strategy Evaluation (MSE) approach for future assessments.
- Difficulties with the timing of the RTA and subsequent MTA were noted. In particular, the 2022 ABCs were set in March only a few days after the RTA was completed. The joint comments of the reviewers were not received until May and the CIE reviews were not available until just before this SSC meeting.

SSC Recommendation

SSC Comments RTA(3)— Managing without an Assessment

- The TOR for the RTA did not include a specific recommendation to examine alternative catch limits. This omission explains some of the differences for methods considered in the RTA with respect to methods used by the SSC. The SSC noted that the
- Distinction between what NOAA Fisheries uses for determination of stock status and what the SSC needs for decision making should be highlighted.
- The Council needs to manage the fishery based on the scientific advice from the SSC, irrespective of the validity of the formal status determination.
- TOR in RTA should be updated to reflect the dilemma when assessments fail. The RTA and MTA process should revisit this aspect of the assessment planning and review process.
- With respect to *Illex*, the catch advice is being crafted apart from the formal review process. Efforts should be placed on how to manage without an assessment. Continuation of work begun by the RTA for Index Methods could be useful.

SSC Recommendation

TOR #2: Suggested Improvements for 2023 “Indirect Method”

- Consider effects of point estimates of uncertainty in estimates of abundance on overall risk profiles.
- Conduct exploratory analyses over whether the model effort results are sensitive to levels of covariation among q , v , and M . If these exploratory analyses indicate that covariation is important, additional analyses should be conducted to inform the scale of the anticipated covariation.
- Consider development of an “indirect method” analysis package that facilitates the transfer of the approach to the Center.
- The SSC notes that the recommendations provided above are offered as short-term improvements in the indirect method. The SSC joins the external peer reviewers of the RTA in recognizing the need for a longer-term plan for improvements to the scientific advice to managers for this species.
- The SSC notes also a desire for improvements in the systems and procedures used to deliver that scientific advice, given the short life span of this species and the highly variable nature of its biology and ecology.

SSC Recommendation

TOR #3: Sources of Uncertainty

- Lack of a peer-reviewed OFL introduces substantial uncertainty for the foundation of ABC determination. SSC is relying on data-poor approaches and reference points used to manage other squid fisheries and used to promote sustainability of exploited forage species.
- Continued uncertainty over the fraction, and interannual variability, of the squid population that is subject to exploitation. Estimates that are likely lower bound estimates of the impact of the fishery on the squid population.
- Lack of understanding of stock-recruitment processes in squid complicates development of biological reference points.
- Lack of understanding of the coherence of squid availability on the shelf with environmental drivers of distribution complicates understanding of whether sequences of good or bad years are likely to occur, which would bias understanding of stock status when using data poor approaches.
- Levels of escapement or other biological reference points that afford protection against overfishing are poorly understood analytically and empirically.
- Estimates of q , v , and M are uncertain and estimates are assumed to be uncorrelated, whereas there are easily conceived processes that could introduce correlations among these key parameters.

SSC Recommendation

- Stay with 40,000 MT ABC for now
- Evaluate update of indirect methods in March 2023 and finalize 2023 ABC at that time
 - Add 2022 data (2022 landings and 2022 survey)

Monitoring Committee

- Maintain recently-implemented specifications
 - 40,000 MT ABC
 - 96% closure threshold
- Staff will expand range of ABCs in NEPA analyses (probably 20,000 MT – 60,000 MT) to facilitate implementation of what the SSC recommends in March 2023 for the 2023 fishery.