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Proceedings of the Maritimes Regional Peer Review of the Stock Assessment of Offshore Whelk in 4Vs and 4W

Meeting date: June 14, 2022

Location: Virtual

Chairpersons: Leslie Nasmith and Rabindra Singh

Editor: Rabindra Singh

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Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings may include research recommendations, uncertainties, and the rationale for decisions made during the meeting. Proceedings may also document when data, analyses or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. As such, interpretations and opinions presented in this report individually may be factually incorrect or misleading, but are included to record as faithfully as possible what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available in the timeframe of the meeting. In the rare case when there are formal dissenting views, these are also archived as Annexes to the Proceedings.

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SUMMARY

This June 14, 2022, stock assessment meeting followed the framework review meeting held on May 17–18, 2022. Using the agreed upon methods from the framework review, this assessment provided advice on the stock status of the Waved Whelk (*Buccinum undatum*, herein referred to as Whelk) to guide decisions in the management of offshore 4Vs and 4W Whelk including the viability of commercial fisheries, the management of food, social, and ceremonial allocations, and commercial quota allocations. The specific objectives addressed in this stock assessment were to determine the current stock status of Whelk based on indicators developed in the framework meeting, provide advice on the continued sampling required to support annual indicators, and provide improvements to the Whelk monitoring document. The meeting was held virtually using MS Teams and invited participants included experts from DFO Science, DFO Resource Management, the Province of Nova Scotia, academics, aboriginal communities/organizations, the fishing industry and non-government organizations. The meeting reviewed and provided feedback on the draft Science Advisory Report which will be used by Resource Management for making management decisions on the Whelk fishery.

INTRODUCTION

This June 14, 2022, stock assessment meeting followed the framework review meeting held on May 17–18, 2022. Using the agreed upon methods from the framework review, this assessment provides advice on the stock status of Whelk to guide decisions in the management of offshore 4Vs and 4W Whelk including the viability of commercial fisheries, the management of food, social, and ceremonial allocations, and commercial quota allocations.

The specific objectives addressed in this stock assessment were as follows:

- Determine the current stock status of Whelk based on indicators developed in the framework meeting;
- Provide advice on the continued sampling required to support annual indicators; and
- Provide improvements to the Whelk monitoring document.

The meeting was held virtually using MS Teams and invited participants included experts from DFO Science, DFO Resource Management, the Province of Nova Scotia, academics, aboriginal communities/organizations, the fishing industry and non-government organizations. See Appendix A for the Terms of Reference, Appendix B for full list of participants, and Appendix C for the agenda for the meeting.

WELCOME AND INTRODUCTIONS

Rapporteur: Jarrad Sitland

The meeting started with the Co-Chair (R. Singh) introducing himself and Co-Chair L. Nasmith and welcoming everyone. The participants were then asked to introduce themselves. R. Singh then briefly described the Canadian Science Advisory Secretariat (CSAS) peer review process and the use of the Scientific Advice for Government Effectiveness (SAGE) Principles and Guidelines. Since the meeting was using Microsoft Teams (MS Teams) as the platform, tips on the effective use of MS Teams were provided. The Terms of Reference with the specific meeting objectives and the Agenda were reviewed.

ASSESSMENT PRESENTATION

A presentation was done by M. Barrett on the assessment of Whelk in 4Vs and 4W based on the guidance developed at the May 17–18, 2022, framework meeting. After the presentation, clarification was sought on the what was meant by the term “length at first capture” used in the ICES length-based approach and it was explained that it was defined as 50% of modal abundance. There were no other questions or comments on the assessment.

The presentation continued on “Future Monitoring.” Datasheets were developed for both detailed and length frequency (LF) sampling to ensure consistency in data collection between licence holders. These were reviewed at the meeting. The LF document is to be filled out for landed catch from each trip and requires information on retained catch rather than unsorted catch. It was proposed that a sample of 100–150 Whelk per trip be collected for length-based indicator sampling. Measurements should be made to the nearest 1 mm or 2 mm instead of 5 mm bins.

Detailed sampling protocols need to be consistent between the licence holders so that sexual maturity is determined in a similar manner. Sexual maturity is presently determined based on gonad relative to shell, and industry will provide information on how the detailed sampling is

done. Any improvements in the protocol around detailed sampling will be discussed moving forward. Right now, maturity in males is determined when penis length is half the length of the body, while in females it is the portion of the gonad relative to the digestive gland. In the Quebec Region, it is the proportion of gonad relative to gonad-digestive gland complex. If it is larger than 10% of the complex, the individual is considered mature. In the Maritimes Region, historically this has been a consistent process throughout the time series, so if any changes are made to the protocol, it may require changes to what has been done in the past. This is especially true for new areas where there may be better ways to conduct the sampling.

The next presentation by M. Barrett was on the “Monitoring Document.” Changes were proposed to the document and these were reviewed. One change was to the number of soak days since it differs by string. Based on discussion during framework, it was thought that it would be better to include it at the string/set level. The importance of this is that for some trap fisheries there is a standardized catch-per-unit-effort (CPUE) including soak time, because gear can become saturated. Having the data collected at a finer scale would be useful for a future framework so it was decided to add soak time at the set level, and removed it from the trip level.

It was suggested that the columns for Stimpson’s Whelk and Moonsnail be removed from the document. Moonsnail is not caught in the fishery and Stimpson’s Whelk cannot be identified and separated at sea. The current fishery allows retention of both of these species, but the only species that is currently recorded is Waved Whelk so both columns were removed from the document. It was further pointed out that after the monitoring framework meeting Resource Management met with industry and there was discussion on the data on Stimpson’s Whelk. Onboard fishing vessels Stimpson’s Whelk and Waved Whelk look very similar. All sized-sorted catch are taken to shore and the majority is Waved Whelk. A study by Louisbourg Seafoods indicated that < 2% of landed catch were Stimpson’s Whelk. Since identification cannot be done on board it does not seem appropriate to keep it in Monitoring Document but information will be captured in detailed sampling by industry.

“Trap type” is also no longer necessary because only the Whelk pot is currently used in the fishery. It was suggested by a participant that both bait type and a record of egg masses be included on the monitoring document; however, it was pointed out that only one type of bait is being used for each trip, so it not necessary to identify bait by the individual string. Egg mass is not usually seen during the fishery so this was not something that should be on the Monitoring Document. In the Quebec Region, egg masses are only collected and recorded in surveys using a drag/dredge.

There is presently no discarding of Whelk at sea other than below the minimum legal size. All discards are of undersized Whelk and this should be clearly labelled as undersized Whelk rather than discards for other reasons.

Lost gear information not necessary to have on the Monitoring Document because there is a designated lost gear fishing form available online.

A participant asked if the detailed sampling information collected by industry will be included in the proposed Whelk update template. This information could be included but would require more effort on the Science side and it would be included if Resource Management would be able to use the information to make management-related decisions.

REVIEW OF THE DRAFT SCIENCE ADVISORY REPORT

Since the presentation was finished, Co-Chair, L. Nasmith led the group through a review of the draft Science Advisory Report (SAR).

A suggestion was made that if it was possible the font size in the text in the map of the fishing area should be increased. Other edits to text and, or, suggested changes to figures were made directly in the draft SAR.

Under the “SOURCES OF UNCERTAINTY” section a question was raised as to the use of the term “potential bias related to hyperstability” and whether it was too early to mention hyperstability since CPUE is already mentioned and that the link between CPUE and biomass is unknown. After discussions, it was agreed to keep the hyperstability text as it is quite important about how the fishery is managed. It was also suggested that text on the uncertainty of survivability on discarded Whelk be added to this section since this is presently unknown.

Under the “CONCLUSIONS” section, a point was raised about the samples used in the ICES length-based approach where that data is showing 10-30% of juveniles being retained being undersized. These data on size distribution are actually coming from detailed sampling done by industry. It was further explained that the samples are of unsorted and ungraded catch and as a result are not exactly representative of what is landed but rather what is caught in the traps.

An industry representative stated that it was believed that roughly 2% of landed catch (as opposed to the unsorted and ungraded samples) are undersized. Another industry representative pointed out that it may be higher than that, but certainly lower than 30%. It is believed that this may be less of a problem for 4Vs than it is for 4W. Since the sampling protocol is the same in both areas then this needs to be made clear in the SAR and that there is uncertainty in the undersized percentages that are in the retained catch for which there is no sampling.

It was further explained that the samples used in the LF records are from the catch in the trap prior to being sorted aboard the vessel. The sample that is used for both length frequencies and for detailed sampling is collected on each trip and in each area to give a snapshot of what is caught in a particular area.

Since this was not clear from earlier communications between DFO Science and the industry, this may need to be highlighted and it may result in elevated number of undersized individuals (as opposed to that in the sorted and graded landed catch) because of the way the collection occurs. This means that less emphasis should be placed on this data because it changes the conclusions. Since no measurements are done on the sorted landed catch there is no comparable data to obtain a good idea of what is being sorted out and what is being discarded.

It was agreed that the SAR will have to highlight that in the sampling protocol, the sampling needs to be done from the sorted and graded catch. Detailed sampling can still be done according to current methods but there is a need to make sure the length frequency sampling uses landed catch information so it can be used to assess the length-based indicators in the future.

It was agreed to proceed with the agreed-upon length-based approach from the framework review. The uncertainty around what is provided needs to be explained. If new data are collected in 2022, this length-based approach is still valid because LF will then be based on how the data should be (actual catch, not unsorted catch) collected to meet the assumptions of the approach. For now, however, there is uncertainty around showing 2 years of data from 4W as having high proportion of undersized catch. This should be interpreted differently now that we know the details of how the sampling was done.

Discussion then occurred around the whether the colour codes in the table on the length-based approach was needed and whether the table should be removed from the SAR. There was consensus that the table should not be included in the SAR since it gives the wrong impression; however, the length-based approach would be retained as a secondary indicator for future use

when the appropriate data are collected in the future. It was also agreed that the paragraph about uncertainty with length-based indicators would be removed and considered in the future when the appropriate catch data are reported.

Since there was still a concern that the proportion of juveniles in the catch may exceed the 5% allowance, a sentence was added that LF sampling and that the length-based approach will be used to monitor this moving forward.

A question was raised about whether port sampling was available for Whelk (like it is being done in the Quebec Region). It was explained that there is no current port sampling for Whelk and this is based on lack of enough samplers. There is currently only two port samplers that cover port sampling in Nova Scotia. It was agreed that there is a need for additional catch monitoring for the Whelk fishery either through at-sea observers or port sampling. Although collection by Industry for both detailed (unsorted catch) and LF samples (sorted retained catch) will remain important.

There was discussion on the frequency of assessments and frameworks. It is usually not a range of years (in this case it was 5–7 years). Five years are typical but 5–7 years was recommended as a range since it comparable to what has been done for other secondary stocks. It was pointed out that in the Quebec Region, assessments are done every 3 years because it is believed that Whelk populations can be locally depleted in an area quite quickly. It was noted in the discussion that a Whelk update will be provided by DFO Science in the Maritimes Region every 2 years to update indicators to monitor the stock and determine stock status.

WRAP UP AND NEXT STEPS

Since there were no other issues to discuss, the summary bullets were reviewed and it was agreed that they will be updated based on the edits made to the relevant sections in the text. The Science Lead (M. Barrett) will make the final adjustments to the text and the SAR will be shared with the participants for one more review.

The meeting ended with the Co-Chairs thanking the reviewers, the rapporteur and all the participants for attending.

APPENDIX A: TERMS OF REFERENCE

STOCK ASSESSMENT OF OFFSHORE WHELK IN 4VS AND 4W

Regional Peer Review - Maritimes Region

June 14, 2022

Virtual Meeting

Chairpersons: Leslie Nasmith and Rabindra Singh

Context

Buccinum undatum, the waved Whelk, is a ubiquitous marine gastropod within the North Atlantic. They are distributed from the low water mark to depths of up to 600 m but are most abundant in the shallower portion of that range (Hansson 1998; Weetman et al. 2006; Włodarska-Kowalczyk 2007; Heude-Berthelin et al. 2011). Their reproductive cycle involves internal fertilization and direct development of larvae within demersal egg capsules. This lack of planktonic larvae coupled with limited adult movement (Pálsson et al. 2014, Lapointe and Sainte-Marie 1992; Hancock, 1963; Himmelman and Hamel 1993) results in a limited dispersal in this species. A growing body of research has shown Whelk to exhibit variation in shell morphology, size at sexual maturity, and size frequency as well as genetic differentiation over relatively small spatial scales (Weetman et al. 2006; Shelmerdine et al. 2007; Pálsson et al. 2014; McIntyre et al. 2015; Valentinsson et al.). This makes Whelk populations vulnerable to local depletion or even extirpation (Gendron 1991; de Jonge et al. 1993), and slow to recover from their removal.

There is currently an exploratory Whelk fishery in Northwest Atlantic Fisheries Organization (NAFO) Divisions 4W and 4Vs. There are no independent surveys and thus information on these stocks is based on data collected by the exploratory license holders (Louisbourg Seafoods Ltd. and Premium Seafoods Ltd.). This stock assessment meeting follows the framework review meeting held on May 17-18, 2022. Using the agreed upon methods from the framework review, the assessment will provide advice on the stock status of Whelk to guide decisions in the management of offshore 4Vs and 4W Whelk including the viability of commercial fisheries, the management of food, social, and ceremonial allocations, and commercial quota allocations.

Objectives

The specific objectives to be addressed in this stock assessment are as follows:

- Determine the current stock status of Whelk based on indicators developed in the framework meeting.
- Provide advice on the continued sampling required to support annual indicators
- Provide improvements to the Whelk monitoring document.

Expected Publications

- Science Advisory Report
- Proceedings

Expected Participation

- DFO Science

-
- DFO Resource Management
 - Provinces of Nova Scotia and New Brunswick
 - Academics
 - Aboriginal communities/organizations
 - Fishing industry
 - Non-government organizations

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APPENDIX B: LIST OF PARTICIPANTS

Participants at the Maritimes Regional Peer-Review virtual meeting June 14, 2022, on the Stock Assessment of Offshore Whelk in 4Vs and 4W.

Name	Affiliation
Barrett, Melanie (Lead)	DFO Maritimes Science
Boudreau, Mathieu (Reviewer)	DFO Quebec Science
Boudreau, Nathan	Premium Seafoods
Chlebak, Ryan	DFO National Headquarters Science
Eberhard, David	DFO, Policy and Economics
Element, Geraint (Reviewer)	DFO Maritimes Science
Finley, Monica	DFO Resource Management
Gianasi, Bruno	DFO Quebec Science
Langille, Janet	DFO Eastern Nova Scotia Area Office
Lundy, Mark	Industry consultant-Ocean Pride
Cooper-MacDonald, Kathryn	DFO Resource Management
MacLean, Allan	Louisbourg Seafoods
Mugridge, Adam	NS Fisheries and Aquaculture
Nasmith, Leslie (Co-Chair)	DFO Maritimes Science
Zabihi-Seissan, Sanaollah	DFO Newfoundland & Labrador Science
Simmons, Kurt	Louisbourg Seafoods
Singh, Rabindra (Co-Chair)	DFO Maritimes Science
Sitland, Jarrad	DFO Resource Management

APPENDIX C: AGENDA

STOCK ASSESSMENT OF OFFSHORE WHELK IN 4VS AND 4W

14 June, 2022

Virtual Meeting (MS Teams)

Time	Topic	Leads
9:00 – 9:15	Introductions and CSAS Procedure	Co-Chairs: L. Nasmith and R. Singh
9:15 – 9:30	Agenda and Terms of Reference	Co-Chairs
9:30 – 10:30	Assessment presentation	M. Barrett
10:30 – 10:45	Break	
10:45 – 12:00	SAR Review	All
12:00 – 1:00	Lunch	
1:00 – 2:30	SAR Review	All
2:30 – 2:45	Break	
2:45 – 4:00	SAR Review and Wrap up	All/Co-Chairs