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Quebec Region

Proceedings of the Quebec Regional Peer Review on the Assessment of Snow Crab Stocks in the Estuary and the Northern Gulf of St. Lawrence

February 19 and 20, 2013

Maurice Lamontagne Institute, Mont-Joli

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Canada

Foreword

The purpose of these Proceedings is to document the key activities and 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 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 document contains the proceedings from the meeting held within the regional assessment process on Snow crab in the Estuary and Northern Gulf of St. Lawrence. This review process was held on February 19th and 20th, 2013 at the Maurice Lamontagne Institute in Mont-Joli. This meeting gathered about fifty participants from sciences to management to industry. These proceedings contain the essential parts of the presentations and discussions held and relate the recommendations and conclusions that were presented during the review.

SOMMAIRE

Ce document renferme le compte rendu de la réunion tenue dans le cadre du processus régional d'évaluation des stocks de crabe des neiges de l'estuaire et du nord du golfe du Saint-Laurent. Cette revue, qui s'est déroulée les 19 et 20 février 2013 à l'Institut Maurice-Lamontagne à Mont-Joli, a réuni près d'une cinquantaine de participants des sciences, de la gestion et de l'industrie. Ce compte rendu contient l'essentiel des présentations et des discussions qui ont eu lieu pendant la réunion et fait état des recommandations et conclusions émises au moment de la revue.

INTRODUCTION

The Quebec Region of the Department of Fisheries and Oceans (DFO) is responsible for assessing the stocks of several exploited fish and invertebrate species in the Estuary and Gulf of St. Lawrence. Most of these stocks are assessed periodically within a regional advisory process, which is conducted at the Maurice Lamontagne Institute in Mont-Joli. This document consists of the proceedings of the meeting held on February 19 and 20, 2013 on the assessment of the Estuary and northern Gulf of St. Lawrence Snow Crab stock.

The objective of the review was to determine whether there were any changes in the resource's status and whether adjustments were required to the management plans based on the chosen conservation approach, the ultimate goal being to provide scientific advice on managing the Snow Crab stock in the Estuary and northern Gulf of St. Lawrence for the 2013 fishing season.

These proceedings report on the main points discussed in the presentations and deliberations stemming from the activities of the stock assessment regional committee. The regional review is a process open to all participants who are able to provide a critical outlook on the status of the assessed resources. In this regard, participants from outside DFO are invited to take part in the committee's activities within the defined terms of reference for this review (Appendices 1 and 2). The proceedings also focus on recommendations made by the meeting participants.

CONTEXT

Meeting chairperson Denis Chabot goes over the objectives of the peer review and how it will proceed and sets out the meeting's Terms of Reference. Stock assessment biologist Jean Lambert begins his presentation by recognizing the work of his colleagues. He notes that some adjacent areas will be reviewed collectively before a recommendation is made for each.

The biologist starts off by providing an overview of the fishery. In the Estuary and the northern Gulf of St. Lawrence, there are 162 regular fishers in nine areas: 12A, 12B, 12C, 13, 14, 15, 16, 16A and 17. Area 16 is the most important area in terms of landings. The conservation principle that applies to these areas aims the protection of reproductive potential. Management measures include limits imposed on catches via a total allowable catch (TAC), effort controls (number of traps, number of licenses and fishing season) and a minimum catch size set at 95 mm. In addition, the fishery is closed when catches in one area include more than 20% white crab. The data used in the assessment are mainly from the fishery (ZIFF and logbooks, commercial sampling) and independent sources (post-season survey, trawl survey). These data provide the key indicators, including the commercial catch per unit effort (CPUE), post-season number per unit effort (NUE), combined CPUE and NUE index, carapace condition, prospects for recruits/adolescents and crab left by the fishery, average size and size frequency.

This year's assessment incorporates some new features, including a combined CPUE and NUE index. This indicator is determined based on the average of the two commercial biomass indices. The two resulting graphs are presented, that is, the historical trend of the combined index and the observation history of the combined index in relation to the TAC. These graphs will be presented for each area. The participants provide some clarifications and comments:

- It is explained that this new index was created as part of the development of a precautionary approach. Consultations with the industry will be held shortly to reach an agreement on this approach.
- The delta presented as a percentage represents the index's variation from the previous year. It is suggested that the commercial delta and survey delta be presented as percentages to facilitate interpretation. It is also agreed that this percentage of variation for the combined index will not be directly linked to the expected variation of the biomass available in 2013 compared with 2012.
- The use of numbers (NUEs) and weights (CPUEs) in the combined index calculation does not appear to affect the results.
- In order to calculate the average of the combined index (level at which 1 is located), the last 13 years were used because they appear to correspond with the length of one cycle and are generally available.

Mr. Lambert goes on to present an index of the cycle (under development), which combines a number of fishery indicators and post-season survey indicators. The latter will not be presented in this assessment. However, a new graph of the changes in average carapace condition (Adu 95+, Adu 78–95) will be included. This graph shows the arrival of recruitment and illustrates crab aging. We will consider mainly the exploited portion (Adu 95+).

Lastly, an overview of the indicators will be provided for each area by including a summary table. The participants provide some comments about the table.

- The colours must be interpreted carefully, as certain indices carry more weight than others.
- A few indices may be redundant, such as the prospect for recruits/adolescents included in the NUE.
- Some participants view the choice of colours as remaining somewhat subjective.
- It is suggested that "Delta" be used instead of "Combined Index."
- The choice of colour for carapace condition must imply that a recruitment fishery is to be avoided.
- The red colour for the TAC index would reflect a TAC that is high in comparison to the value of the combined index.

ASSESSMENT OF THE RESOURCE

Mr. Lambert reviews the key indicators for each fishing area. The participants put forward some questions and comments. A summary table is presented along with the synopsis, and a recommendation for the 2013 fishing season is made.

AREA 16

Indicators

The TAC decreased by 20% in 2011 and remained stable at 3 686 t from 2011 to 2012. This TAC was reached. The catch rate increased to above average during the 2012 commercial fishery. Landings have consisted primarily of recruits since 2006.

The post-season survey suggests that there will be more biomass available to the fishery in 2013 than there was in 2012 and that landings will still consist primarily of recruits.

The size of crabs caught in the commercial fishery decreased slightly in 2012 but remains well above average. It should remain similar in 2013 according to the post-season survey.

The post-season survey indicates strong recruitment in 2012. This finding is consistent with the trawl survey conducted in the western part of the area, which indicates that the fishery is supported by a recruitment wave that should continue until 2015.

The combined commercial CPUE and post-season NUE index is high and suggests that there will be more biomass available in 2013 than there was in 2012.

The carapace condition index from the post-season survey is low for crabs ≥ 95 mm.

The increase in the combined biomass index and continued strong recruitment to the fishery suggest that catches could be increased in 2013 without creating an excessively high harvesting intensity.

- It is explained that all the data in the series (until 2011) were used to establish the reference mean CPUE.
- It is agreed that this fishery is primarily focused on individuals of carapace condition 2. It appears that the current exploitation rate allows for an increase in CPUEs.
- An inconsistency in the post-season survey is identified in regards to the number of crabs measured in 2012, which should be higher than that of 2011 (higher NUE in 2012). After verification, this calculation error is corrected.
- There is consensus that the new recruitment wave should be felt until 2015.
- The fishers think that there are more older crabs on the sea floor.
- The indices are fairly positive overall. Even with a high TAC between 2007 and 2010, recruitment does not appear to have been affected. The participants believe that a 25% increase to reach the TAC for these years is possible. However, the Stock Assessment Biologist reminded them that there is little biomass accumulated on the sea floor, that is, few crabs of carapace condition 3 or 4. The 25% recommendation should be stated as a maximum figure.

Recommendation - Area 16

An increase for 2013 that does not exceed the 2012 TAC by more than 25% should not result in an excessively high harvesting intensity.

AREA 15

Indicators

The TAC and landings have peaked at 593 t since 2008. The commercial fishery catch rate increased to above average in 2012. Landings consisted of a slight majority of intermediate-shell crabs.

The post-season survey suggests that the 2013 fishing yields will be similar to those of 2012 and that they will consist of a slight majority of intermediate-shell crabs.

The size of crabs caught in the commercial fishery has increased and remains well above average. It should remain high in 2013 according to the post-season survey.

The abundance index from the post-season survey in 2012 remained high for recruits and adolescents ≥ 78 mm, suggesting that strong recruitment will continue in the short term.

The combined commercial CPUE and post-season NUE index is relatively high and suggests that there will be more biomass available in 2013 than there was in 2012.

The carapace condition index from the post-season survey is low for both adults ≥ 95 mm and adults of 78–95 mm.

The increase in the combined biomass index and the short-term prospects, which suggest continued strong recruitment to the fishery, seem to indicate that catches could be slightly increased without creating an excessively high harvesting intensity.

- Industry representatives consider the 2012 indicators to be fairly positive.
- The observation history of the combined index in relation to the TAC indicates, however, that the TAC in previous years may have been too high.
- Although an increase in the CPUE and combined index was observed in 2012, the previous years showed a downward trend. According to some participants, this situation warrants caution.
- However, the participants agree on the presence of recruitment.
- The participants would therefore be comfortable with a TAC increase that does not exceed 10%. However, this increase would have to be partly justified by referencing recruitment. In addition, context should be provided for the exploitation rates of previous years, which seem overly high.

Recommendation - Area 15

An increase in catches in 2013 that does not exceed those in 2012 by more than 10% (59.3 t) should allow the commercial biomass to remain high.

AREAS 12C, 16A AND 14

The indicators for areas 12C, 16A and 14 are reviewed before the respective recommendations are made.

Indicators

Area 12C

The highest TAC since 2008 has been 320 t and was reached in 2012. The commercial fishery catch rate has been low since 2009, despite a slight increase in 2012. Landings consisted primarily of intermediate-shell crabs.

The post-season survey suggests that 2013 fishing yields could be slightly higher than those of 2012 and that landings will consist primarily of intermediate-shell crabs.

The size of crabs caught in the commercial fishery decreased slightly in 2012 compared to 2011 but remains above average. It could decrease slightly in 2013 according to the post-season survey.

The post-season survey indicates a decrease in the abundance of adolescent crabs ≥ 78 mm and recruits to values that are near and slightly above average, respectively.

The combined commercial CPUE and post-season NUE index suggests that slightly more biomass will be available in 2013 than there was in 2012.

The carapace condition index from the post-season survey has increased but remains low for both adults ≥ 95 mm and adults of 78–95 mm.

The increase in the combined biomass index and the short-term prospects, which suggest that recruitment to the fishery will remain above average, seem to indicate that catches could be slightly increased without creating an excessively high harvesting intensity.

- Overall, the 2012 indices are up. A number of participants believe that catches could be slightly increased by about 10%.
- This area is closely linked to what is happening in adjacent areas (15, 12C, 16A, 14). Therefore, advice must be formulated in line with the situation in these areas.

Area 16A

The TAC and landings have peaked at 426 t since 2009. The commercial fishery catch rate has remained low since 2009, despite a slight increase in 2012. In 2012, landings consisted primarily of intermediate-shell crabs, although there was an increase in recruits.

The post-season survey suggests that the 2013 fishing yields will be higher than those of 2012 and landings will continue to consist primarily of intermediate-shell crabs.

The size of crabs caught in the commercial fishery in 2012 was greater than in 2011 and well above average. It will remain high in 2013 according to the post-season survey.

The post-season survey indicates a high abundance of recruits and adolescent crabs ≥ 78 mm since 2010.

The combined commercial CPUE and post-season NUE index suggests that more biomass will be available in 2013 than there was in 2012.

The carapace condition index from the post-season survey has increased for adults ≥ 95 mm but remains low, as is the case with adults of 78–95 mm.

The increase in the combined biomass index and the short-term prospects, which suggest continued strong recruitment to the fishery, seem to indicate that the catches could be slightly increased without creating an excessively high harvesting intensity.

- It is noted that the exceptional datum from 2005 could have an upward influence on the average, but it will be retained.
- In terms of indicators, the situation appears similar to that in Area 12C. Participants suggest a slight increase of 10%.

- Industry representatives remind those present that the area is associated with Area 16, for which a TAC increase of approximately 25% was recommended. A recommendation of an overly low TAC poses the risk of "giving up" on this area, considering the travel costs associated with this area's geographic location.

Area 14

The TAC was 407 t in 2011 and 2012 and was reached. The commercial fishery catch rate has been stable but below average since 2010. In 2012, landings consisted primarily of intermediate-shell crabs, although the proportion of recruits has been increasing since 2009.

The post-season survey suggests that fishing yields will be higher in 2013 and include a greater proportion of recruits.

The size of crabs caught in the commercial fishery has decreased since 2009 and was well below average in 2012. It should remain low in 2013 according to the post-season survey.

The post-season survey indicates that, in 2012, the abundance of adolescent crabs ≥ 78 mm and recruits increased to the highest level in the series.

The combined commercial CPUE and post-season NUE index suggests that more biomass will be available in 2013 than there was in 2012.

The carapace condition index from the post-season survey is low for both adults ≥ 95 mm and adults of 78–95 mm.

The increase in the combined biomass index and the short-term prospects, which suggest continued strong recruitment to the fishery, seem to indicate that catches could be slightly increased without creating an excessively high harvesting intensity.

- Those present are reminded that, unlike the above-mentioned areas, Area 14 was subject to a 20% decrease in TAC in 2011.
- A number of participants view the situation in this area as being more positive now, particularly in light of the increase in the NUE and combined index. In addition, there does not appear to be any short-term concerns about recruitment.
- However, some participants consider the CPUE and quantity left by the fishery to still be low.
- Opinion seems to be divided as to whether we should maintain the status quo or slightly increase the TAC by 10%.
- It is agreed that our recommendation must be consistent for areas 14, 16A and 12C.

Accordingly, the participants agree to recommend a 10% increase for all three of these areas: 16A, 12C and 14. This is a short-term position. Compared to Area 15, the situation in these areas warrants more caution.

Recommendation - Area 12C

An increase in catches in 2013 that does not exceed those of 2012 by more than 10% (32 t) should not result in an excessively high harvesting intensity.

Recommendation - Area 16A

An increase in catches in 2013 that does not exceed those of 2012 by more than 10% (43 t) should not result in an excessively high harvesting intensity.

Recommendation - Area 14

An increase in catches in 2013 that does not exceed those of 2012 by more than 10% (41 t) should not result in an excessively high harvesting intensity.

AREA 13

Indicators

Following a five-year moratorium (2003 to 2007), the area was opened with a TAC of 150 t for 2008 and 2009 and a TAC of 188 t for 2010 and 2011. The TAC was lowered to 169 t in 2012 and landings totalled 163 t. The commercial fishery catch rate increased between 2011 and 2012 but remains below the 1988–2011 average. Fishing effort was higher in the southern part of the area. Since 2008, landings have consisted primarily of intermediate-shell crabs.

The north and south post-season surveys suggest that fishery yields will be higher in 2013 than in 2012. If the fishing effort remains higher in the south, landings will still primarily consist of intermediate-shell crabs.

The size of crabs caught in the commercial fishery was well above average in 2012 and, according to the post-season survey in the south, it should remain high in 2013.

The post-season survey shows a sharp increase in the abundance of recruits and adolescents ≥ 78 mm in the north. This is consistent with the results of the trawl survey, which indicates the presence of a recruitment wave in this area. The post-season survey shows a slight decrease in recruits and adolescents in the south.

The combined commercial CPUE and post-season NUE index suggests that more biomass will be available in 2013 than there was in 2012.

The post-season survey's carapace condition index is low for the north and high for the south.

The combined biomass index and the short-term recruitment prospects, which are up, suggest that catches could be slightly increased without creating an excessively high harvesting intensity.

- Mention is made of exploration having taken place in this area in 2012, which could explain the low CPUEs. Fishers have observed a great deal of white crab, which seems to be an encouraging sign for next year.
- A significant difference in recruitment is noted between the area's southern part (lower) and northern part (increasing).
- In regards to the combined index, for which there are no values for the moratorium years (2003 to 2007), it is questioned whether the post-season survey data can be included for these years. This should be considered.
- The at-sea size index is considered unreliable, as it depends on the fishing location where the observer was present.

- The graph of carapace condition changes shows a fishing impact during the moratorium, which remains difficult to explain. This inconsistency may need to be resolved if this indicator is to be used as part of the precautionary approach.
- In this area, most males moult at a sub-legal size. Some feel that there is a significant loss for the fishery. However, the reproductive potential is well protected.
- Participants are also reminded about the concern relating to the Newfoundland fishers (Area 12D), whose fishing season precedes that of Area 13. The potential impact on the Area 13 stock should be considered.
- A TAC increase is considered possible, but a number of participants seem uncomfortable with an overly high increase. 10% over one year or 20% over two years is suggested. As part of the short-term implementation of the precautionary approach, the participants agree on a recommendation of around 10%, that is, a return to the 2011 TAC level of 188 t.

Recommendation - Area 13

An increase in 2013 catches to a value not exceeding 188 t should not result in an excessively high harvesting intensity.

AREAS 17, 12A AND 12B

The indicators for areas 17, 12A and 12B are reviewed before the respective recommendations are made.

Indicators

Area 17

The TAC increased by 15% to 1 809 t between 2011 and 2012 and was reached. The catch rate during the 2012 commercial fishery decreased and was in the average range. Landings consisted primarily of intermediate-shell crabs.

The post-season survey decreased slightly in 2012 and has remained below average since 2007. This survey suggests that the 2013 fishing yields will vary little from those of 2012.

The size of crabs caught in the commercial fishery remained stable and high in 2012, but it will decrease in 2013 according to the post-season survey.

The post-season survey suggests that there will be little recruitment to the fishery in 2013, a finding consistent with the results of the 2011 trawl survey. The trawl survey suggests that the stock is currently in a recruitment trough.

The combined commercial CPUE and post-season NUE index suggests that there will be less biomass available to the fishery in 2013 than there was in 2012.

The carapace condition index from the post-season survey is relatively high, indicating a high proportion of intermediate- and old-shell crabs, in terms of both legal and sub-legal sized adults.

Maintaining or increasing 2012 catch levels in 2013 would result in a harvesting intensity greater than that of 2012. An increase in catches may result in a greater reduction in the biomass of legal-sized adult males because of low recruitment. This would make the fishery more vulnerable to the presence of white crab in catches. Moreover, a significant decrease in large males could result in a decline in reproductive success because, according to the trawl survey, primiparous females will remain abundant in 2013 and 2014.

- To start, reference is made to the arrival of a recruitment wave. The trawl survey indicates that the recruits will reach legal size in 2014. Most of the white crab should be observed in 2014, and the first cohort would be recruited to the fishery in 2015. Four to five other cohorts should follow.
- Industry representatives think that the quantity left by the fishery has continued to grow despite the TAC increases. In light of the good prospects for medium-term recruitment as well, they believe that a TAC increase of 10% is possible.
- According to Science, the increase in the proportion of crab left by the fishery is due to the recruitment trough. With there being few recruits, the older crabs are increasing in relative but not absolute numbers. Science is leaning toward a status quo.
- It is noted that the indices have appeared fairly stable for three years, but the Science representatives' concern is the two-year recruitment trough (2013 and 2014).
- Science is also concerned about the protection of reproductive potential. It is difficult to comment on the matter at this time. However, new data will be available shortly to provide new insight.
- While the fishers do not share Science's point of view, they do not object to a status quo.
- Science would like for the advice to refer to the risks associated with an increase in catches.

Area 12A

The TAC increased by 40% to 162 t between 2011 and 2012 and was reached. The catch rate during the commercial fishery decreased in 2012 but remains high. Landings consisted primarily of intermediate-shell crabs.

According to the post-season survey, fishing yields will decrease in 2013 and consist primarily of intermediate-shell crabs.

The size of crabs caught in the commercial fishery is at the highest value of the series since 2011, but it should decrease in 2013 according to the post-season survey.

The post-season survey indicates a sharp decrease in the abundance of recruits and adolescent crabs ≥ 78 mm to well below average.

The combined commercial CPUE and post-season NUE index suggests that there will be less biomass available to the fishery in 2013 than there was in 2012.

The carapace condition index from the post-season survey is relatively high, indicating a high proportion of intermediate- and old-shell crabs, in terms of both legal and sub-legal sized adults.

Maintaining or increasing 2012 catch levels in 2013 would result in a greater harvesting intensity than that of 2012. An increase in catches could result in a greater reduction in the biomass of legal-sized adult males because of low recruitment. This would make the fishery more vulnerable to the presence of white crab in catches.

- Participants are reminded that the CPUE increase in 2011 was associated with catches in the western part of the area, which was not repeated in 2012.
- In regards to the graph of the observation history of the combined index in relation to the TAC, concerns are raised about the potential bias in interpretation when the TACs for certain years are not reached. Should the landed value be used instead? Participants are also reminded that the high TACs in the early 2000s pertain to a different management approach, which could bias the interpretation.
- The participants view the situation in this area to be fairly similar to the situation in Area 17, although the indices remain slightly higher. They are divided about whether to maintain a status quo or apply a 10% increase.
- It is noted that the significant TAC increase in 2012 was followed by a downward trend in indicators. The participants agree that it would be more prudent to stay at the same TAC level for another year and to therefore recommend a status quo.
- The advice should also mention the risks associated with an increase in catches.

Area 12B

The TAC increased by 20% to 325 t between 2011 and 2012 and was reached. The catch rate during the commercial fishery increased slightly and is well above average. Landings consisted primarily of intermediate-shell crabs.

The post-season survey suggests that the commercial fishery catch rate will be higher in 2013 than in 2012. Landings should consist primarily of intermediate- and old-shell crabs if the entire area is harvested.

The size of crabs caught in the commercial fishery has increased gradually since 2009 and was well above average in 2012. It should remain high in 2013 according to the post-season survey.

The 2012 post-season survey indicates that the abundance of recruits and adolescents ≥ 78 mm was near the historical average.

The combined commercial CPUE and post-season NUE index is high and suggests that more biomass will be available to the fishery in 2013 than there was in 2012.

The carapace condition index from the post-season survey is at a mid-range value, suggesting a mix of recruits and older individuals.

The combined biomass index is up, and the short-term prospects do not suggest that recruitment to the fishery will decline in 2013.

- In 2012, fishing pressure was reduced in the western part of this area, which explains a shift to the east. In the fishers' opinion, the eastern part of the area lacks crab.
- Industry representatives ask if random samples could be included as part of the post-season survey, which could paint a different picture of the situation. It is explained that

the survey has been developed over a number of years in order cover the entire area and that it is important to maintain continuity.

- The participants consider an increase in catches possible, particularly in light of the high proportion of crab left by the fishery. However, this increase should not be so high that it affects recruitment.
- A 15-to-20% increase is agreed upon.

Recommendation - Area 17

The same TAC used in 2012 is recommended for 2013 to avoid creating an excessively high harvesting intensity.

Recommendation - Area 12A

The same TAC used in 2012 is recommended for 2013 to avoid creating an excessively high harvesting intensity.

Recommendation - Area 16B

A 15-to-20% increase in the 2012 TAC for 2013 would not result in an excessively high harvesting intensity.

RESEARCH IDENTIFICATION AND PRIORITIZATION

In regards to the research priorities, the following is recommended:

- Develop a precautionary approach;
- Continue the work involving spermatheca load (reproductive potential);
- Explore the potential of developing an exploitation rate index via the carapace condition index (harvested area vs. unharvested area);
- Assess the possibility of spreading the trawl survey out differently in order to obtain the most useful information;
- Examine the possibility of using small-meshed traps in the post-season survey.

APPENDIX

1- PARTICIPANT LIST

Name	Affiliation	February 19	February 20
Archambault, Diane	DFO Science	X	
Bernier, Denis	DFO Science	X	X
Boucher, André	RPPNG		X
Bourassa, Luc	Biologist consultant	X	X
Bourdages, Hugo	DFO Science	X	X
Briand, Yann	Fisher area 16	X	
Chabot, Denis	DFO Science	X	X
Cloutier, Yvan	Fisher Area 16	X	
Collier, Frank	APBCN	X	
Côté, Francis	Fisher Area 12A		X
Cotton, Allen	ACPG	X	X
Couillard, Catherine	DFO Science	X	
Courtemanche, David	DFO FAM		X
Cyr, Charley	DFO Science	X	X
Dallaire, Jean-Paul	DFO Science	X	X
Desgagnés, Mathieu	DFO Science	X	X
Dubé, Sonia	DFO Science	X	X
Dupuis, Mario	RPPNG	X	X
Gauthier, Johanne	DFO Science	X	
Gendron, Louise	DFO Science	X	X
Gosselin, Claude	Fisher Area 17	X	X
Gosselin, Serge	DFO Science	X	X
Joncas, Jean-Richard	Fisher OFBS	X	
Labrecque Michel	Fisher area 12A		X
Lambert, Jean	DFO Science	X	X
Landry René	Chair Crabier zone 17	X	X
Langelier, Serge	AMIK	X	X
Légaré, Benoît	MPO Sciences	X	
Léonard, Pierre	Innus Essipit	X	X
Maltais, Domynick	DFO Science	X	
Monger, Marc	Fisher Area 14	X	
Monger, Victor	Fisher Area 13	X	
Morin, Bernard	MPO FAM		X
Morisset, Jean	MPO FAM	X	X
Morneau, Renée	DFO Science	X	X
Nadeau, Paul	APBCN	X	
Pinette, Majoric	Conseil des Innus Pessamit	X	X
Pouliot, France	MPO Habitat management	X	X
Rail, André	Fisher Area 16	X	
Rondeau, Marie-Hélène	AGHAMM		X
Sainte-Marie, Bernard	DFO Science	X	X
Savard, Louise	DFO Science	X	X
Stubbert, Curtis	Fisher Area 15	X	
Thibeault, Sébastien	Malécite de Viger		X
Tremblay, Yann	Pêcheries Uapan	X	
Trottier, Steve	DFO Science	X	X
Vigneault, Guy	Fisher SHIPEK and Area 16	X	

2- TERMS OF REFERENCE

Assessment of the Estuary and northern Gulf of St. Lawrence Snow Crab stocks

Regional Peer Review - Quebec Region

February 19-20 2013
Mont-Joli, Québec

Chairperson : Denis Chabot

Context

The snow crab fishery in the Estuary and the northern Gulf of St. Lawrence began in the late 1960s. Landings have varied depending on the adjusted Total Allowable Catches (TACs) based on the recruitment waves and troughs. In 2011, landings have totaled 7,490 t, down slightly from 2010.

The Estuary and northern Gulf of St. Lawrence are divided into nine management areas (13 to 17, 16A, 12A, 12B and 12C). The effort is controlled by a fishing season and catches are limited by quotas.

The resource is assessed each year to determine whether changes that have occurred in the stock status necessitate adjustments to the conservation approach and management plan.

Objectives

Provide scientific advice to determine TACs for the snow crab stocks in the Estuary and northern Gulf of St. Lawrence: management units 13 to 17, 12A, 12B and 12C for the 2013 fishing season. The advice shall include:

- Description of the biology of the snow crab in the Estuary and northern Gulf of St. Lawrence;
- Description of the fishery including landings, fishing effort, carapace condition, size structure and mean carapace width for males;
- Analysis of catches per unit effort from the fishery;
- Analysis of data from post-season trap surveys conducted annually in collaboration with fishers. Indicators: number per unit of effort (NUE) of legal-size and sub-legal-size crabs, size, spermatheca load and carapace condition of males;
- Analysis of data from trawl survey(s) conducted annually in certain sectors or areas. Indicators: abundance index of legal-size and sub-legal-size males, maturity, size of both males and females;
- Identification and prioritization of research projects to be considered for the future;
- Perspectives and/or recommendations on management measures in effect for the 2013 fishing seasons based on a summary table of main indicators for the precautionary approach and short- and medium-term predictions.

Expected Publications

- Canadian Science Advisory Secretariat (CSAS) Science Advisory Report on snow crab of the Estuary and Northern Gulf of St. Lawrence;
- CSAS Proceedings summarizing the discussion.

Participation

- Fisheries and Oceans Canada (DFO) Science and Fisheries Management
- Fishing industry
- Provincial representatives
- Aboriginal Communities / Organizations