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Proceedings of the Newfoundland and Labrador Regional Advisory Process on Lobster, 2009

January 15 – January 16, 2009
Stymies Meeting Room, Clovelly Golf Club,
Stavanger Drive, St. John's, NL

Meeting Chairperson
Geoffrey T Evans

Editor
K. R. Skanes

Compte rendu du Processus de consultation scientifique régional de Terre-Neuve et du Labrador sur le homard – 2009

15 janvier – 16 janvier 2009
Salle de reunion Stymies, Club de golf Clovelly,
Stavanger Drive, St. John's, T.-N.-L.

Président de la réunion
Geoffrey T Evans

Auteur
K. R. Skanes

Fisheries and Oceans Canada / Pêches et Océans Canada
Science Branch / Direction des sciences
PO Box/C.P. 5667, 80 East White Hills Road
St. John's, NL/T.-N.-L., Canada A1C 5X1

February 2010 | **Février 2010**

Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings include research recommendations, uncertainties, and the rationale for decisions made by the meeting. Proceedings 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.

Avant-propos

Le présent compte rendu a pour but de documenter les principales activités et discussions qui ont eu lieu au cours de la réunion. Il contient des recommandations sur les recherches à effectuer, traite des incertitudes et expose les motifs ayant mené à la prise de décisions pendant la réunion. En outre, il fait état de données, d'analyses ou d'interprétations passées en revue et rejetées pour des raisons scientifiques, en donnant la raison du rejet. Bien que les interprétations et les opinions contenus dans le présent rapport puissent être inexacts ou propres à induire en erreur, ils sont quand même reproduits aussi fidèlement que possible afin de refléter les échanges tenus au cours de la réunion. Ainsi, aucune partie de ce rapport ne doit être considéré en tant que reflet des conclusions de la réunion, à moins d'indication précise en ce sens. De plus, un examen ultérieur de la question pourrait entraîner des changements aux conclusions, notamment si l'information supplémentaire pertinente, non disponible au moment de la réunion, est fournie par la suite. Finalement, dans les rares cas où des opinions divergentes sont exprimées officiellement, celles-ci sont également consignées dans les annexes du compte rendu.

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SUMMARY

A meeting of the Newfoundland and Labrador Regional Advisory Process (RAP) on American Lobster (*Homarus americanus*) was held January 15 – 16, 2009 in St. John's, Newfoundland and Labrador. Its purpose was to assess lobster stocks in Lobster Fishing Areas (LFAs) 3 – 14 that surround the island of Newfoundland. A presentation was made by an Oceans biologist on studies in Eastport where there are two Marine Protected Areas (MPAs) and a presentation was made by a Food Fisheries & Allied Workers (FFAW) representative on a survey of the feelings of fisher people on fishery performance compared to other years.

A Science Advisory Report (SAR) was written and reviewed in meetings from January 19 – January 21, 2009. It includes overall summary bullets reviewed and written at the RAP meeting. This proceedings report includes an abstract and summary of discussion for working papers and presentations discussed during the RAP, progress on research recommendations from the 2006 RAP and a list of research recommendations from this RAP.

Additional information on the 2009 assessment of Newfoundland and Labrador lobster stocks is available in the Canadian Science Advisory Secretariat (CSAS) research document series and SAR.

SOMMAIRE

Une réunion du Processus de consultation scientifique régional (PCSR) de Terre-Neuve et du Labrador sur le homard (*Homarus americanus*) a eu lieu les 15 et 16 janvier 2009, à St. John's, Terre-Neuve-et-Labrador. Le but de la réunion était d'évaluer les stocks de homard des zones de pêche au homard (ZPH) 3 à 14 qui entourent l'île de Terre-Neuve. Un biologiste de la Direction des océans a présenté un exposé sur des études menées à Eastport, où l'on trouve deux zones de protection marines (ZPM). Un représentant de la Food Fisheries & Allied Workers (FFAW) a également donné un exposé sur un sondage concernent l'opinion des pêcheurs sur le rendement de la pêche, comparativement aux années antérieures.

Pendant les réunions tenues entre le 19 et le 21 janvier 2009, un avis scientifique (AS) a été formulé et passé en revue. Celui-ci comprend des points du sommaire généraux qui ont été rédigés et passés en revue à la réunion du PCSR. Le présent compte rendu comprend un résumé ainsi qu'un sommaire des discussions pour chaque document de travail et exposé présenté, les progrès accomplis à l'égard des recommandations en matière de recherche formulées pendant le PCSR de 2006 ainsi qu'une nouvelle liste de recommandations en matière de recherche

Des renseignements supplémentaires sur l'évaluation des stocks de homard de Terre-Neuve et du Labrador de 2009 sont disponibles dans les séries de documents de recherche et dans l'AS du Secrétariat canadien de consultation scientifique (CSAS).

INTRODUCTION

A meeting of the Newfoundland and Labrador RAP was held January 15 – 16 at the Stymies Meeting Room at Clovelly Golf Course in St. John's, Newfoundland & Labrador, to carry out an assessment of the status of American Lobster in Newfoundland LFAs.

The meeting began at 0900 on January 15 with the chairperson introducing himself and inviting all participants to do the same. It was indicated that questions and discussions would be accepted at any time during the presentations. It was clearly noted at this time that all discussions were private until the SAR is released.

In attendance at the RAP were representatives from Fisheries & Oceans Canada (from Science, Fisheries & Aquaculture Management and Policy & Economics branches), the fishery, FFAW, Government of Newfoundland Labrador (Department of Fisheries & Aquaculture) and Memorial University.

MEETING PROCEEDINGS

Working paper and presentation abstracts are printed exactly as received from the authors.

WP 2009/01. R. Collins, G. Evans, D. Orr, D. Stansbury, K. Skanes, D. Fiander, P. Veitch and J. Janes. An assessment of Newfoundland American Lobster (*Homarus americanus*) in 2009. (Presented by Roanne Collins)

Abstract – In Newfoundland, lobster (*Homarus americanus*) is harvested by approximately 2900 fishers from Lobster Fishing Areas (LFAs) 3 to 14C. The lobster fishery is managed by input controls including a minimum legal size of 82.5 mm carapace length (CL), prohibition on landing V-notched or ovigerous females, limited entry, seasons and trap limits. The number of participants, duration of seasons, and trap limits vary among LFAs. The assessment is based on fishery-dependent data. Resource status was evaluated by LFA, based on reported landings and fishery monitoring data for five localized sites around the island. Newfoundland lobster landings increased in recent years, from 1900 t in 2004 to 2600 t in 2007, due largely to increased landings in LFAs 11, 13A, 13B and 14A, while reported landings in LFAs 4, 8, 9 and 10 declined to record lows in 2007. Data for LFAs 3, 4, 6, 7, 8, 9, 12, 13A, 13B and 14C are insufficient to assess the size of the stock, the extent and direction of changes in abundance, and the rate of renewal. At-sea sampling data for LFAs 5, 10, 11, 14A and 14B indicate that the catch consisted largely of incoming recruits, and that annual survival of males was generally less than 0.2. Survival of females was higher. The most extensive time series of commercial logbook data comes from Eastport (part of LFA 5), and shows that commercial catch per unit of effort has changed little since 1997. V-notching has been taking place annually since initiation in the mid-1990s, but there are no reliable accounts of how much has taken place. If there is a positive effect on recruitment, it should become discernible in about three to five years. Extensive logbook data would enable the assessment of V-notching activity, and may provide estimates of abundance and survival.

Discussion – The lobster RAP began with an overview of lobster biology including when they molt, mate and are fished. This introduction was followed by a brief presentation on how the lobster fishery is managed, including the timing of the fishing season, licensing, trap limits, legal size and protection measures for female lobsters.

Landings data are obtained from the Policy and Economics Branch of the Department of Fisheries and Oceans. Values are calculated based on returned purchase slips from harvesters. These purchase slips are sometimes lost, submitted late, or never submitted and often no purchase slips are completed for local sales. Since 2008 data was incomplete at the time of the RAP, no data was presented for that fishing season.

Figures were presented by LFA although in many LFAs the only data available was landings data and sometimes limited log book data allowing a catch per unit effort (CPUE) to be calculated for certain areas. Other areas have at sea sampling data allowing an analysis of the size structure of trapped lobsters while one LFA has extensive research and data. Some LFA presentations triggered no discussion while others triggered a lot. The presentations at the RAP were arranged by LFA, as are the discussions below.

CPUE is not an abundance index but because there are so little fishery-independent data for the lobster fishery in Newfoundland, it would be good to learn as much as possible from logbook data and the CPUEs calculated from it. It should be possible to develop an abundance index from CPUE combined with temperature and other factors. At the RAP it was unknown how much temperature data was available around the island in addition to Station 27. Some people were uncomfortable with using station 27 temperature data as a proxy for the entire island.

Lobster Fishing Areas 3, 4, 6, 7, 8 , 9, 12, 13A, 13B and 14C

Discussion – LFAs 3, 4, 6, 7, 8, 9, 12, 13A, 13B and 14C had insufficient data to assess the lobster stocks. All these areas had landings data but logbook data availability was sporadic and the logbook data available may not be a good indicator of the fishery since logbook returns were low and raw CPUE is not an abundance index. A clearer picture of the stock would come from mandatory logbooks. It is impossible to infer trends in the population given the limited data. Discussions on the areas that prompted questions and comments are presented below.

LFA 3 Discussion – There were no log books returned from this area but landings data were presented. It was asked if we could draw any conclusions from decreased landings over the last few years but it was not possible since there was no other data for the area.

LFA 4 Discussion – While most landings come from subarea 4B, there were decreased landings in both areas. There were some logbooks returned which were analyzed resulting in a CPUE figure showing a decline. Since logbooks are not mandatory and return of them is low, it is difficult to infer any information from these figures. There were questions about the division of a LFA into different areas (ie. 4A and 4B). These areas are treated differently because they are discrete management areas.

LFA 6 Discussion – This area had some logbook returns so CPUE figures were presented. It was asked if these catch rates were good or bad but there is no reference point to determine that. The question was raised whether CPUE was standardized by temperature data but they were not.

LFA 13 Discussion – Logbook data is available in this area but was sufficient for presentation only for the first 4 weeks of the fishery. This is one of the best commercial lobster areas but showed a decline in CPUEs this year. It was asked if the catch rates presented were good or bad considering these catch rates look excellent compared to other areas. It was pointed out that LFAs cannot be compared to one another because they are in

different areas of the province with different oceanographic conditions, habitat, abundance and lobster population dynamics.

The question was raised about how high the CPUEs were at the beginning of the fishing season and whether their decline indicated stock depletion. The lobster fishery relies on incoming recruitment to legal size annually and effort is always very intense at the beginning of the season. About 80% of the annual landings are reported in the first 2 weeks of the fishery with virtually no landings at the end. It was mentioned by a fisher that they sometimes move to rougher waters, causing smaller catches, when catch rates in their favorite areas are too low.

Lobster Fishing Areas 5, 10, 11, 14A, and 14B

Discussion – Data from these LFAs include at-sea sampling and provide information on stock structure (including V-notched females) and mortality rates. A new model was used for estimating mortality in this assessment. A lot of discussion arose about the estimation of intermolt period. It was presented that a reasonable estimate was fed into the model whereas in previous assessments methods gave unreasonable estimates (sometimes as high as 17 years). A lobster can have the same shell for up to 4-5 years.

A possible scenario in the male lobster population is that about 50% have an intermolt period of 1 year while 50% have an intermolt period of 2 years. For this reason an intermolt period of 1.5 years was used in estimates of male mortality/exploitation. Since there have been no studies on the effects of using an average intermolt period in the model, the output is not reliable. For this reason, the model estimates of mortality or exploitation on male lobsters cannot be accepted and were excluded from the SAR, however it was concluded that survival was less than 0.2 for male lobsters.

Female lobsters have a biennial molt reproductive cycle and are protected from harvest while berried. It was discovered that the model had further complications for female lobsters since the model accounted for the female lobster either molting or not. It was possible that the female lobsters included in the model could become ineligible for molting and harvest because they were berried. The model does not account for the biennial molt reproductive cycle and more study is needed on the model with female lobster, and what data are used for it.

A caveat of the model for exploitation/mortality is that it assumes constant recruitment. A pulse of recruitment would cause exploitation rate estimates to increase and a decline in annual recruitment would cause an underestimate of exploitation.

It was difficult to determine a shift between size distributions from year to year. More may be learned if figures of deviations from the average frequencies are plotted rather than raw size frequencies.

LFA 5 Discussion – More discussions of the Eastport LFA are captured after a later presentation and paper (WP 2009/02) since the Oceans division of Fisheries and Oceans took over sampling of this area in 2004 and implemented 2 small closed areas there. Landings have been declining in this area for quite some time.

A lot of discussion arose about V-notching, how much occurs and whether the practice is having the desired effect on the lobster population. There was an overall reduction in the number of V-notched females in Eastport but the numbers of V-notched legal-sized females

in this area is higher than in any other LFA for which data is available. If V-notching and larval production are increasing, there is not enough information available and not enough time has passed since the practice began to say for certain that they are related. If V-notching is working the effects should be seen in 3-5 years. Standard lobster pots do not retain many small lobsters but some fishers started using modified (small-meshed) pots last year and it is hoped that more information will be garnered on small lobsters using data collected from these pots. A measure of how much V-notching is happening in all areas is needed.

There is concern among fishers that female lobsters that are damaged and/or marked up are considered V-notched by enforcement officers. These lobsters are often thrown back or V-notched even though they may not be a prime female lobster.

LFA 10 Discussion – Landings in Placentia Bay have reached an all-time low and a low level of pre-recruits was observed in this area. Regardless of sample sizes, the size distribution is about the same and there are a lot more animals in larger size groups. It was asked if this area is green crab (*Carcinus maenas)* territory and whether this could affect the numbers of pre-recruits. There may have been an overlap of breeding lobster and green crab but green crab were not observed until 2007 so it is unlikely that they were the reason for low pre-recruits.

LFA 11 Discussion – Landings in Fortune Bay have reached an all-time high and at-sea sampling data suggest that large portions of the catch are recruits. It is uncertain what percentage of the catch the landings represent as landings are calculated based on purchase slips. Purchase slips are not always completed for local sales, some lobster are sold in areas other than where they are caught, and some purchase slips are never received. The actual catch is always higher than the landings presented.

It is difficult to understand how exploitation in Fortune Bay is as high as 99% while in the adjacent area of Placentia Bay the exploitation rate is reported at less than 60%. The recruitment in Fortune Bay has likely been high for quite some time.

LFA 14 Discussion – Some logbook data were available for this area but logbook returns were too low to gain any knowledge about the lobster population at the end of the fishing season. Size distributions from this area imply that there is not a lot of V-notching. Exploitation rates are generally higher for males than for females as they are more “trap happy” and females are offered some protection when they are berried or V-notched. Trap limits have decreased in these areas and there may be fewer people fishing, implying a decrease in effort.

It was shown in previous assessments that length frequencies had a sharp drop just before the legal size and may have been attributed to poaching; it was asked if this is still evident. There is a sharp drop just before legal size in area 14B which may be due to poaching or it could simply be rounding by the sampler.

Monty Way (Fish, Food and Allied Workers). 2008 Newfoundland and Labrador Lobster Survey.

Abstract – The importance of the lobster fishery to harvesters, their families and communities and the need for more information on the lobster stock indicates the need for

more involvement from fish harvesters. The knowledge and experience of those who are closest to the resources must be included in any assessment of this valuable resource.

In 2008, the Fish, Food and Allied Workers Union (FFAW/CAW) sent a Lobster Survey (mail-out) to fish harvesters who participated in the 2008 Lobster Science Survey. All one hundred twenty-three fish harvesters who completed both the 2008 Commercial Lobster Logbooks and Modified Lobster Logbooks were sent a survey to complete.

The overall purpose of the survey was to collect the views and opinions of fish harvesters on the status of the lobster resource in their particular lobster fishing area (LFA). The survey comprised of questions on the abundance of commercial, berried, and undersized lobsters.

Discussion – The questionnaire asked about abundance of commercial, berried and undersized lobsters from the harvester's perspective. They were asked to rate abundances as better, same, or worse than in previous years. The response was not excellent and in order to present the results, areas were grouped together. Fortune Bay and Placentia Bay were grouped together which would give misleading results since fishery performance in Fortune Bay is at its best whereas in Placentia Bay it is at its worst. It was mentioned that a phone survey may get much better response so that a clearer opinion of the fishery could be obtained in individual areas.

WP 2009/02. J. Janes. Using Marine Protected Areas to Protect Lobster Populations in Eastport.

Abstract – Marine Protected Areas (MPAs) have emerged as potential conservation tools for improving oceans management worldwide. As more MPAs with no-take marine reserves are established, the importance of evaluating their effectiveness is growing. Two MPAs, Round Island and Duck Islands, around the Eastport Peninsula, Bonavista Bay, Newfoundland were officially designated in October 2005. It was expected that these MPAs would act as reserves for American lobster (*Homarus americanus*), where larger lobsters are allowed to grow and contribute to a successful breeding population producing a viable population of lobsters which may seed the surrounding area through adult spillover. This paper focuses on a portion of an annual lobster monitoring program established in 2004, which consists of tagging lobsters inside the Eastport MPAs and the surrounding open areas and collecting data on size, sex, condition (ovigerous or non- ovigerous) and movement. Data was then compared to tagging data collected at Eastport in 1997, after the areas were first closed under the *Fisheries Act* and following one fishing season. Ten years after closure, the populations inside these MPAs show a broadening of size structure including a higher abundance of large lobsters and the survival of large ovigerous females. In general, average carapace lengths of male and female lobsters inside the MPAs are larger than the outside commercially fished areas, and in most instances have increased in the ten years following the closures. The proportion of ovigerous females also appear to be higher inside the MPAs compared to outside commercially fished areas. In addition, increased presence of large lobsters was detected in the adjacent commercially fished areas. Small numbers of lobsters are migrating across the MPA boundaries. These MPAs have contributed to conserving this population of American lobsters.

Discussion - Two small closed areas were established in Eastport (LFA 5) in which no commercial fishing is permitted. Detailed sampling included size, sex, ovigerous or not, and area caught and occurs inside and outside the MPA by the same crew who were trained by the Oceans section.

The same effort (25 pots) was applied inside and outside both MPAs. Statistical tests (KS, ANOVA and Chi-Square) were used to test the significance of the difference between results inside and outside the closed areas. Average carapace lengths of males and females, proportion of berried females and movement of tagged lobsters were some stock indicators looked at.

There was a feeling from fishers that the closed areas may not be serving the purpose for which they were established. Average size is increasing which should mean more egg production into the system, but the landings in the area are down. It is clearly demonstrated that within the closed areas there is a change in population structure, but it would be good to see if the population structure in the entire LFA has changed and not just in these small areas.

Tagging of lobsters was performed inside and outside the closed areas. It was presented that more lobsters moved from inside the closed area to outside. Since more lobsters were caught inside than out, more lobsters were tagged inside the closed area than outside. A presentation on fractions of lobsters that were tagged inside then found outside the closed area, or on those tagged outside and then found inside, would give a greater understanding on the movement of lobsters.

PROGRESS ON RESEARCH RECOMMENDATIONS FROM 2006 RAP

1) If there was temperature data for LFA 11 Leslie analysis could be applied. If it was modeled without temperature, what would be the effect? In areas where it is possible, it was recommended to evaluate the catch ratio method ("poor scientist changing method") against the Leslie method. A comparison of the result would be helpful. Temperature information for a LFA would be required to accomplish this.

Leslie analysis was done without temperature incorporated and the model did not work. There was some confusion as to what "catch ratio method" meant. If this was simply to compare the method of estimating exploitation from at-sea data against Leslie data, this was addressed briefly at the 2006 RAP. For 2009, the Leslie estimates of exploitation were not used, so no comparisons could be made.

RESEARCH RECOMMENDATIONS FROM 2009 RAP

Outcomes of the research recommendations would be more accurate if a mandatory commercial logbook program were implemented.

1) Investigate the scope for answering questions about the extent V-notching and its efficacy.

2) Develop a fishery-based index of abundance by incorporating effects of environment and size on catchability.

3) Explore more appropriate models for depletion analysis.

4) Establish a monitoring program using modified traps with a view to developing a pre-recruit index.

5) Investigate the possible effects of closed areas on emigration, egg production and subsequent nearby recruitment by including closed areas in addition to Eastport.

6) Scrutinize more carefully the impression that pre-recruit size frequency doesn't change over time.

7) Investigate the effects of individual variability in intermolt period on mortality estimates from molt class ratio methods.

8) Explore the utility of combining data from LFAs.

APPENDIX I: Remit

Remit

Meeting of the Newfoundland Regional Advisory Process (RAP) on Lobster

The Stymies Meeting Room, Clovelly Golf Course, Stavanger Drive
St. John's, Newfoundland & Labrador
January 15-16, 2009

Stock Assessments

Chair: Geoff Evans, Marine Systems Ecologist

Status of the following stocks will be assessed:

- Lobster: LFAs 3-14C

A Science Advisory Report (SAR) and associated research documents will be produced for this assessment. A Proceedings document will record the meeting discussions.

Role of Participants

The Department is endeavoring to ensure all stock assessment meetings are open and transparent peer review process, and provide ample opportunity for knowledgeable individuals to contribute to the process. As such, attendees are expected to participate fully in the discussions and offer objective, informative, and constructive input that will aid in the process while respecting confidentiality requirements. It is not intended that participants come to RAP meetings merely to be informed about conclusions on stock status nor to 'lobby' regarding any issue.

Other Notes

Should any group or individual wish to present information at this meeting a copy of the presentation and abstract for consideration as part of the meeting proceedings should be forwarded to the Chair Geoff Evans (Tel: (709) 772-2090; FAX: (709) 772-4188; E-mail: geoff.evans@dfo-mpo.gc.ca).

APPENDIX II: Agenda

Lobster RAP 15-16 January 2009
Approximate agenda
The purpose of the meeting is to consider, integrate and interpret all information bearing on the status of the stock; and the agenda is designed with the assumption that people are here to participate in the whole process. Presentations and discussions will be structured by theme more than by Lobster Fishing Area. Timing is only approximate: each topic will be given as much discussion time as it needs.

Thursday morning 15 Jan at 9:00am:
Geoff Evans: Introductory remarks
Roanne Collins: Main presentation on the information available. The presentation will probably end with LFA5 (Eastport) for which there is the most information.
Harvey Jarvis: Perspectives from industry.

Thursday afternoon
General discussion and interpretation.

Friday 16 Jan at 9:00am (as much time as is profitable)
Jennifer Janes: Tagging studies near Eastport.
Formulating the main messages that the meeting wishes to convey in the Science Advisory Report (SAR).

Week of 19 Jan
The meeting will reconvene in the EPS Boardroom of the Northwest Atlantic Fisheries Centre to write the text of the SAR. The purpose of this part of the meeting is not to change the conclusions reached the previous week, but to describe them, and the data and reasoning that led to them, in more detail. All participants are invited to this part of the meeting as well.

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APPENDIX IV: List of Working Papers and Presentations

WP 2009/01. R. Collins, G. Evans, D. Orr, D. Stansbury, K. Skanes, D. Fiander, P. Veitch and J. Janes. An assessment of Newfoundland American Lobster (*Homarus americanus*) in 2009.

Monty Way (Fish, Food and Allied Workers). 2008 Newfoundland and Labrador Lobster Survey.

WP 2009/02. J. Janes. Using Marine Protected Areas to Protect Lobster Populations in Eastport.