



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Science

Sciences

C S A S

Canadian Science Advisory Secretariat

Proceedings Series 2004/001

S C C S

Secrétariat canadien de consultation scientifique

Série des compte rendus 2004/001

Proceedings of the Regional Advisory
Process on Lobster from LFA 25

February 3, 2004
Château Moncton
Moncton, New Brunswick

Comptes-rendus du processus consultatif
régional du homard de ZPH 25

Le 3 février, 2004
Château Moncton
Moncton (Nouveau-Brunswick)

Gerald Chaput
Chairperson / Président de réunion

Fisheries and Oceans Canada
Gulf Fisheries Centre
P.O. Box 5030
Moncton, New Brunswick
E1C 9B6

Pêches et Océans Canada
Centre des pêches du Golfe
C.P. 5030
Moncton (Nouveau-Brunswick)
E1C 9B6

March 2004 / mars 2004

Canada

FOREWORD

The purpose of these proceedings is to archive the activities and discussions of the meeting, including research recommendations, uncertainties, and to provide a place to formally archive official minority opinions. As such, interpretations and opinions presented in this report may be factually incorrect or mis-leading, but are included to record as faithfully as possible what transpired at the meeting. No statements are to be taken as reflecting the consensus of the meeting unless they are clearly identified as such. Moreover, additional information and further review may result in a change of decision where tentative agreement had been reached.

AVANT-PROPOS

Le présent compte rendu fait état des activités et des discussions qui ont eu lieu à la réunion, notamment en ce qui concerne les recommandations de recherche et les incertitudes; il sert aussi à consigner en bonne et due forme les opinions minoritaires officielles. Les interprétations et opinions qui y sont présentées peuvent être incorrectes sur le plan des faits ou trompeuses, mais elles sont intégrées au document pour que celui-ci reflète le plus fidèlement possible ce qui s'est dit à la réunion. Aucune déclaration ne doit être considérée comme une expression du consensus des participants, sauf s'il est clairement indiqué qu'elle l'est effectivement. En outre, des renseignements supplémentaires et un plus ample examen peuvent avoir pour effet de modifier une décision qui avait fait l'objet d'un accord préliminaire.

**Proceedings of the Regional Advisory
Process on Lobster from LFA 25**

February 3, 2004
Château Moncton
Moncton, New Brunswick

**Comptes-rendus du processus
consultatif régional du homard de ZPH 25**

Le 3 février, 2004
Château Moncton
Moncton (Nouveau-Brunswick)

**Gerald Chaput
Chairperson / Président de réunion**

**Fisheries and Oceans Canada
Gulf Fisheries Centre
P.O. Box 5030
Moncton, New Brunswick
E1C 9B6**

**Pêches et Océans Canada
Centre des pêches du Golfe
C.P. 5030
Moncton (Nouveau-Brunswick)
E1C 9B6**

March 2004 / mars 2004

© Her Majesty the Queen in Right of Canada, 2004
© Sa majesté la Reine, Chef du Canada, 2004

ISSN 1701-1280

Published and available free from:
Une publication gratuite de:

Fisheries and Oceans Canada / Pêches et Océans Canada
Canadian Science Advisory Secretariat / Secrétariat canadien de consultation scientifique
200, rue Kent Street
Ottawa, Ontario
K1A 0E6

<http://www.dfo-mpo.gc.ca/csas/>

CSAS@DFO-MPO.GC.CA



Printed on recycled paper.
Imprimé sur papier recyclé.

Correct citation for this publication:
On doit citer cette publication comme suit:

Chaput, G. 2004. Proceedings of the Regional Advisory Process on Lobster from LFA 25. DFO Can. Sci. Advis. Sec. Proceed. Ser. 2004/001.

Chaput, G. 2004. Comptes-rendus du processus consultatif régional du homard de ZPH 25. Secr. can. de consult. sci. du MPO, Compte rendu. 2004/001.

TABLE OF CONTENTS

Summary.....	iv
Introduction	1
I – Overview of LFA 25 Fishery	2
II – Coastal Bottom Water Temperature Monitoring in Northumberland Strait	2
III – Trawl Surveys in LFA 25, 2001 to 2003.....	3
IV – Fishery Based Indicators of Stock Status in LFA 25.....	5
1. Landings in LFA 25	6
2. At-Sea Sampling	6
3. Index-Fishermen Program	7
4. Recruitment-Index Program.....	7
5. Fishery effort indices.....	8
V – Condition of Female Lobster in LFA 25	8
VI – Conclusions and Recommendations for LFA 25	9
Appendix 1 – Invitation letter	12
Appendix 2 – Remit	13
Appendix 3 – Agenda	14
Appendix 4 – Lists of participants	15

SUMMARY

A regional assessment of the lobster fishery in the management zone designated as Lobster Fishing Area (LFA) 25 was conducted on February 3 2004. The purpose of the meeting was to review the information and interpretation of the data relating to the fishery, biology, and to infer the status of the lobster resource in LFA 25. Indices based on the number of empty traps in August, decline in the CPUE after the second week of the fishery, and indices of pre-recruits and recruits from the fisheries programs and the trawl surveys were consistent, and indicated a continued decline in abundance. Analysis of the effects of past and possible management actions on the biology and status of lobster were presented to show the type of information and the analyses which could be conducted to assess management options.

SOMMAIRE

La pêche du homard dans la zone de gestion désignée comme la zone de pêche du homard (ZPH) 25 a été évaluée dans le cadre d'une réunion tenue le 3 février 2004. L'objectif de la réunion était de passer en revue les données sur la pêche et la biologie du homard et leur interprétation et de là, de déduire l'état de la ressource dans la ZPH 25. Les indices reposant sur le nombre de casiers vides en août, la baisse des PUE après la deuxième semaine de pêche et les indices d'abondance des prérecrues et des recrues provenant des programmes de pêche et des relevés au chalut concordent, ce qui indique un déclin soutenu de l'abondance. Une analyse des effets des mesures de gestion antérieures et possibles sur la biologie du homard et l'état de la ressource fut présentée pour montrer quel type de données sont requises et les analyses qui pourraient être faites pour évaluer les options de gestion.

INTRODUCTION

A regional assessment of the lobster fishery in the management zone designated as Lobster Fishing Area (LFA) 25 was conducted on February 3 2004. The session was held at the Chateau Moncton, Moncton, New Brunswick. Simultaneous translation services were provided.

The announcement and distribution of invitations for the meeting had previously been sent the week of January 16, 2004 (Appendix 1).

Documents available for distribution at the meeting included:

- Copy of the remit
- Copy of the proposed meeting agenda
- Copy of the working paper entitled: Stock Status of the American Lobster, *Homarus americanus*, in the Lobster Fishing Area 25, by M. Comeau, J.M. Hanson, M. Mallet, and F. Savoie.

The meeting began at 10:10 AM. The chair welcomed participants to the meeting and indicated that simultaneous translation was available. As an introduction, the chair indicated that the assessment meeting followed on the regional assessment process of February 2002 in which the status of the lobster fisheries in all fishing areas of the southern Gulf of St. Lawrence had been reviewed. The documents from that meeting which formed the background for the present assessment process are available from the Fisheries and Oceans Canada (DFO) internet site (www.dfo-mpo.gc.ca/csas/):

- DFO Science Stock Status Report C3-12(2002) - Southern Gulf of St. Lawrence Lobster (Lobster Fishing Areas 23, 24, 25, 26A and 26B)
- CSAS Proceedings Series 2002/011 – Proceedings of the Peer Review of Groundfish and Lobster in the Southern Gulf of St. Lawrence

The chair then reviewed the remit of the meeting (Appendix 2). As further clarification, it was indicated that the meeting was to review the information and interpretation of the data relating to the fishery, biology, and to infer the status of the lobster resource in LFA 25. The purpose of the meeting was not to develop a management plan nor to discuss other management questions. Analysis of the effects of past and possible management actions on the biology and status of lobster would be presented to show the type of information and the analyses which could be conducted to assess management options. At the end of the day, the participants at the meeting including biologists, fisheries managers, fishermen and the industry would have the same information with which to address questions related to management of the fishery and of the resource.

Documentation to arise from the meeting include: a proceedings document summarizing the meeting, the presentations and discussions and a research document that is a revised version of the working paper distributed at the meeting. In response to a question regarding whether the working paper was available in French,

the chair responded that it was not but the final research document and the proceedings document would be bilingual.

The meeting agenda was reviewed indicating that the objective was to finish the meeting at 4:00 PM with a one hour break for lunch (Appendix 3). The proposed order of presentations was reviewed. There were no suggestions from the participants for changing the order or additional items, therefore, the agenda was adopted.

The chair invited the participants to introduce themselves and to complete the attendance form for the meeting documentation (Appendix 4). After a review of the location of exits of the meeting room and location of health break facilities, the meeting proceeded as per the agenda.

I – Overview of LFA 25 Fishery (presenter: M. Comeau)

Lobster Fishing Area (LFA) 25 is located in the western and central part of Northumberland Strait, and is bordered by the three Maritime Provinces. LFA 25 is a summer-fall fishery operating from mid-August to mid-October. The number of license holders has been somewhat stable since the implementation of regulations limiting fishing activities by LFA in 1934, and following the introduction of limited access to fishing licenses in 1967. The total number of traps that could be fished in one day for the entire LFA in 2003 was 211,630. The two primary management measures are the minimum legal size (MLS) and non-retention of egg-bearing lobsters.

Lobster catch information for the southern Gulf of St. Lawrence (sGSL) can be traced back to the 1890's. Starting in the mid 1970's, lobster landings in the sGSL increased sharply to a record landing of 22,000 t in 1990. Although part of the latest increase in landings could be attributed to an increase in fishing power, favorable environmental factors are thought to have favored very strong lobster recruitment success over its entire range from Labrador to North Carolina. Landings increased in all LFAs but the timing of the peaks differed between LFAs as did the pattern of decline of landings following the peaks. This reflects the heterogeneity of the spatial distribution and the temporal variability of the lobster resource in the sGSL.

For LFA 25, landings peaked in 1985 at just over 6,000 t. In 2002, reported landings were 3,210 t, continuing a continuous declining trend from the peak in 1985. While 2002 landings were 52% of the peak, they remained substantially above the average level of 1,800 t recorded from 1965 to 1975.

II – Coastal Bottom Water Temperature Monitoring in Northumberland Strait (presenter: F. Savoie)

Coastal bottom temperature regime from three sites in the Northumberland Strait that were deemed representative of the general area and which had multiple years of data

were presented. The sites selected were Pugwash (Nova Scotia), Shediac and Escuminac (New Brunswick).

For each site, the average weekly trends were presented for the period May to November with particular reference to the fishing season in LFA 25 (Aug. 10 to Oct. 10). In addition to the temperature trend and variability for the first four weeks of the fishery, the accumulated degree-days (ADD) and the daily average temperature were presented. The ADD was calculated against 0°C and 4°C baselines to provide information relative to thermal energy associated with various biological processes, movements and molting respectively.

In Escuminac, the temperature profiles in 1995 and 1997 were significantly colder than the other years, while 2001 was the coldest year for the Shediac area, reaching only 15°C. In Pugwash, the temperature profiles were similar for all the years.

In 2003, total ADD adjusted to 0°C in Escuminac showed similar profiles to those observed between 1999 and 2002 but with higher values for the beginning of the year. However, when adjusted to 4°C the 2003 profile showed that temperature at the beginning of the year was less than 4 °C. In Shediac, total ADD profile in 2001 was well below those observed in other years, for ADDs adjusted to both 0°C and 4°C. In Pugwash, ADDs adjusted to 0°C and 4°C both showed higher values in 2000 and 2002.

In LFA 25, average daily temperature increases during the first 4 weeks of the season followed by a steady decline thereafter. The warmest temperatures are observed in the southern part of the LFA, reaching values over 20°C. ADDs in the northern part of the LFA are between 25% and 50% lower than those in the southern portion. In addition to these north to south differences in ADD trends, annual differences were also observed.

Questions and Discussion Points

A clarification was asked regarding the difference in the 0°C and 4°C ADD calculations. In terms of lobster biology, movements are related to the 0°C ADD profiles whereas physiology including molting is related to the 4°C ADD.

Additional comments were provided that 2003 was different from other years though not as cold as 1995 and 1997.

III – Trawl Surveys in LFA 25, 2001 to 2003 (presenter: J.M. Hanson)

A pre-fishery trawl survey that covers all of LFA 25 (greater than 4 m depth) and a post-fishery survey in the central zone just after the fishing season closed was conducted in 2001 to 2003.

Distribution maps indicated there were low densities of market-size lobster and negligible numbers of canner and sub-legal size lobster from the southern portion of LFA 25 (to about Pictou Island) during August. There were very high densities of canner and sub-legal size lobster along the New Brunswick coast from roughly Bouctouche, through to the northern border of LFA 25, and continuing into Inner and Outer Miramichi Bay. The highest densities of market-size lobster occurred in the southern portion of LFA 25 (the area from West Point, PEI, - Saint Edouard de Kent, NB, to Tryon Head, PEI, - Cape Tormentine, NB).

While the location of highest lobster concentrations did not differ between years, the Catch per Unit Effort (CPUE) dropped dramatically between years in the pre-fishery survey. Between 2001 and 2003, the standardized CPUE for canner-size lobster in the pre-fishery survey dropped by > 80% and >45% in the northern and southern portions of LFA 25, respectively. The standardized CPUE for market-size lobster in the pre-fishery survey dropped by > 60 % in the northern portion of LFA 25 and by 27% to 51% in the southern portion. The index of sub-legal size lobster (within 1 or 2 molts of entering the fishery) has declined every year since the first survey in 2001 (81% in the northern portion).

In the southern part of LFA 25, the index of removals (based on change in CPUE between seasonal surveys) was very high. The exploitation index for canner-size lobster in the southern portion was 66% and 57% in 2002 and 2003, respectively. The exploitation index for market-size lobster was 55% and 52% in 2002 and 2003, respectively.

The ratio of males to females in the northern zone has increased significantly between 2001 and 2003 but has not changed in the southern portion of LFA 25.

Predator-prey interactions were investigated by examining stomach contents of the most abundant fishes and large crustaceans from Northumberland Strait. Rock crab was the principal prey (>50% of prey biomass) for all sizes of lobster. Lobster remains (mainly cast off carapaces) comprised up to 10% of the diet as did small sea stars. Polychaetes, lady and hermit crab, small snails, and tunicates were the other common prey (up to 5% of prey biomass). Lobster ate relatively small amounts of fish and bivalve molluscs. Diet overlap studies (cluster analysis and multi-dimensional scaling) showed relatively low overlap between lobster diets and those of all other species – primarily due to the very high importance of rock crab in the lobster diet. Of the 13 fish species studied, four (herring, mackerel, American shad, and gaspereau) only ate small zooplankton. Cunner (<1% of prey biomass) and shorthorn sculpin (6 % of prey biomass) were the only species to eat lobster. Most other fish and large crustaceans (rock crab and lady crab) fed on *Crangon* shrimp, polychaetes, small mollusks, and echinoderms.

Questions and Discussion Points

The industry indicated that the spatial distribution and abundance maps correspond to the observations from the fishery

Changes in survey coverage between 2001 and 2003 represent different questions being asked during the survey. In 2001, the objective was to survey distribution within LFA 25. In 2002, the coverage was extended north and west to characterize the abundance at the northwest edge of the zone. In 2003, the survey considered the eastern distribution of lobster for LFA 25.

It is assumed that catchability of lobster is the same for pre-versus post-fishery surveys, which permits an estimation of an exploitation rate index. Temperature regimes are generally similar in both time periods.

There are no other techniques currently available to estimate an exploitation index for this area. Commonly used methods require the assumption of closure which is violated for LFA 25.

The exploitation rate for 2001 is calculated using incomplete survey coverage during the post-fishery period. As a result the exploitation rate is considered an overestimate. There was no attempt to adjust the post-fishery estimate for the unsampled area nor to use a reduced area of LFA 25 in both the pre and post-fishery surveys to estimate the exploitation rate in 2001 because of the possible movement of lobster from surveyed to unsurveyed areas. On the other hand, in all years, the pre survey under estimates the abundance of commercial lobsters because of molting and changes of size categories of lobster which occurs during the pre-fishery survey.

Survey results suggest a movement of lobster into or within LFA 25 from the west due to near complete absence of lobster in the southern portion of LFA 25 at all times.

No information on composition of seal diets was presented because none were sampled in these studies. Marine mammal research is conducted by DFO Laurentian Region (Mike Hammill).

Lobster remains found in stomachs of lobster are considered to represent consumption by lobster of exuvia (old molted shell).

IV – Fishery Based Indicators of Stock Status in LFA 25 (presenter: M. Comeau)

The most recent trends in fishery and resource status were presented for the Lobster Fishery Area (LFA) 25. Indicators from fishery-based data collected to establish the stock status of LFA 25 were taken from: 1) the DFO official catch statistics, 2) at-sea sampling, 3) index-fishermen logbook, and 4) recruitment-index logbook.

Landings in LFA 25

Within the sGSL, LFA 25 was the first area to reach its record high landings, in 1985, but landings have shown a steady declining trend. This 17 year decline is the largest one observed in the sGSL lobster fishing areas. Within LFA 25, the increase in catches was observed in all statistical districts (SDs), but they reach their peaks at different times. SDs located in the southern part of the LFA peaked earlier (1985) than those located in the northern part (1988-1989). In the southern SDs, there was a sharp increase followed by an equally sharp decline over approximately a 7 year period. As for SDs located in the northern portion of the LFA, the downward trend has not been as sharp as their increasing trend, or as the declining trend observed in the southern portion. Landings may be a crude index of the overall status and annual fluctuations of the stock. Increases in fishing power and changes in social-economic situations can bias the view of abundance. Nonetheless, the increase in lobster catches since the mid-1970 cannot be explained entirely by an increase in fishing power. The increase and recent decline in lobster catches in LFA 25 are considered to be real changes in the lobster stock biomass.

Questions and Discussion Points

There was substantial discussion regarding the differences in landings and trends between the north and south districts. It was indicated that effort was likely an important factor. There was a turning point in the use of technology since the mid-80s. The dramatic variation in the landings from district 45, compared to the other areas, was an accurate description of the experiences of fishermen in that district.

The second point of discussion addressed the issue of movement of lobster, the source of lobster for the LFA 25 fishery and the potential impact of the northern district fishery on the fishery in the districts to the south. Information obtained from the trawl suveys (previous section) indicates the highest concentrations of lobster in the northern portion of LFA 25 with a suspected movement of lobster into LFA 25 from the north and west rather than from the east.

At-Sea Sampling

The at-sea sampling program began in 1982 and consists of sampling onboard the vessel the catches from the traps. Data recorded include: lobster size, sex and condition (egg stage of berried females), trap position on the line, and geographic position of the line of traps.

At-sea sampling data show a decline in the recruitment over time. The situation was more severe in the southern part of the LFA. Based on CPUE, a declining trend was clearly being observed in the capture of both the sub-legal and canner size lobsters, indicating a likely reduction in stock abundance.

Questions and Discussion Points

The data, trends and interpretation were accepted by the group with agreement that the data indicated a decline in abundance and recruitment to the fishery, with the decline more important in the southern portion of the LFA.

Index-Fishermen Program

A voluntary logbook program was initiated by DFO Science Branch in 1993. Volunteer fishermen record their daily fishing activities including: catch by category (canner and market), number of traps hauled, and the number of soak days. The program has provided daily catch and effort information for approximately 2% of the fishing activity within LFA 25. Participants were located throughout the LFA. Lobsters in LFA 25 are in the canner size category for approximately one molt before growing into market size, therefore the ratio of canner: market can be used as the indicator relative survival after the first year in the fishery.

The data showed the same declining trends observed with other indicators for canner and market size lobsters. Annual canner: market ratio trends are declining in all SDs. Since landings have been declining over the past 17 years, it was concluded that the decline in ratio represented a decline in abundance.

Questions and Discussion Points

There were a few questions related to the amount of time canner sized lobster would be in the fishery which for the LFA 25 lobster, represents one fishing year. Despite the changes in MLS, it is not possible for a pre-recruit lobster to molt into the market size and bypass the canner category. There was further explanation that the canner: market ratio was changing but that the market sized lobster has always been caught at low levels.

Recruitment-Index Program

A recruitment-index program was put in place in 1999 with an objective of obtaining information on pre-recruit CPUE. Fishermen voluntarily complete a daily logbook of their catch and trap hauls and sample part of their catch daily throughout the season. The special part of the program is the sampling of catches from six discrete traps, three of which have the escape mechanism blocked. Fishermen record size and sex of all lobsters caught in these traps (by trap) providing CPUE data by size and trap type. Data from the modified traps (escape vent blocked) provide a verification of the pre-recruit CPUE observed in the at-sea sampling program.

In the southern part, there was little difference in size distribution between the regular and the modified traps indicating low abundance of pre-recruits. In the northern part, sub-legal size lobsters were more abundant in the modified traps. Despite the increases in MLS in 1998 and 2003, there was no evidence of increased abundance

of pre-recruits or changes in size distribution. Similar to the at-sea sampling program, declining trends in abundance of pre-recruit, canner and market size lobsters were observed.

Questions and Discussion Points

The data, trends and interpretation were accepted by the group. The absence of pre-recruits in the modified traps was highlighted as an important index of poor recruitment. Although data on the abundance of females in a management window introduced in 2003 were collected by the participants in the program, the data had not been examined to evaluate this initiative.

Fishery Effort Indices

The index-fishermen program provided information on fishery effort and fishing strategies. There was a sharp decrease in weekly CPUE after the second week of the fishery. In the southern portion of the LFA, many fishermen do not haul their entire fishing gear on a daily basis in order to increase trap soak time to compensate for low lobster abundance. It was estimated that the number of traps without commercial size lobster in August increased from about 5% in 1986 to 50% in 2003.

Questions and Discussion Points

The data, trends and interpretation were accepted by the group as another indicator of a decline in abundance and high efficiency of the gear.

V – Condition of Female Lobster in LFA 25 (presenter: M. Comeau)

In the sGSL, lobster mating and spawning occur between July and September. The majority of female lobsters follow a two-year reproductive cycle. However, up to 20% of the females in the sGSL could spawn in successive years and some could even molt and spawn in the same summer, with the length of the reproductive cycle related to water temperature. In LFA 25, females with a one-year reproductive cycle could be landed during the early post-molt phase, before they extrude the eggs. The female maturity condition in LFA 25 was investigated in 2002 and 2003. Their reproductive state was determined from the ovary condition and pleopod staging techniques.

Females in their egg-extrusion year were observed in the commercial catch in the first three weeks of the fishery with the relative proportions being higher in the catch from the southern portion of the LFA. However, the absence in the catch of females in their egg-extrusion year was observed in the same period of the season in both areas. The female reproductive condition indicated that a high percentage (up to 47%) of mature females in their egg-extrusion year (exposed to the fishery a second time) was present in the commercial catch.

Questions and Discussion Points

On this topic, there were questions regarding the effect of temperature on the extrusion rate of the eggs and whether the same proportion of female lobster had yet to extrude eggs at a specific time of the year. The proportion varied among the two years sampled indicating that environmental conditions, specifically temperature, could be a factor in the timing of the egg extrusion. However, by the first week of September, there would be few to no female lobster which had not extruded their eggs.

VI – Conclusions and Recommendations for LFA 25

LFA 25 has a recruitment fishery relying on animals in their first molt into the fishery. Exploitation indices from the pre- and post-fishery trawl surveys, considered to be minimum, were greater than 50%. This situation arises from the high level of fishing effort and the high exploitation rate that results in very few lobsters escaping the fishery in their first year of availability. Greater than 50% of the landings are caught within the first 20 days of the fishery. Indices based on the number of empty traps in August, decline in the CPUE after the second week of the fishery, and indices of pre-recruits and recruits from the fisheries programs and the trawl surveys are consistent and indicate a continued decline in abundance.

An initial discussion around these points was unanimous in the interpretation that the reduced landings were associated with reduced recruitment to the fishery. The group agreed with a statement by the chair that the objective was to increase recruitment and overall lobster abundance in LFA 25. A presentation by M. Comeau indicated that the reduced recruitment could result at several points in the life cycle: reduced egg production, reduced larval survival, and constraints on survival during the settlement phase. The factor which the fishery most directly impacted was the production of eggs, i.e. exploitation of female lobsters. The question was raised by the chair whether anyone felt that reducing egg production could produce increased recruitment. No one answered affirmatively. There are no guarantees that increasing egg production would result in increased recruitment; however, reducing egg production is even less likely to result in increased recruitment. The conclusion then was to consider how egg production could be increased.

The remaining discussions focused on three options which may provide a means of reducing exploitation and increasing egg production. The chair reminded the group that the discussions were not intended to take decisions on options for the fishery but rather to show how options could be presented, how data would be used to evaluate the options in terms of their biological impact on the resource, and to identify whether sufficient data existed to evaluate the benefits. It was also indicated that the indicators of benefit to the stock of any measures to enhance egg production would only be realized seven years later since that is the time required for lobster to develop from egg to canner size. The three options discussed were:

1. reducing effort overall
2. increasing minimum size limit
3. changes in the opening of the season

Reducing effort is intuitively a reasonable way of reducing exploitation. A distinction was made between nominal effort which is the effort allowed under the existing regulations and management plan (211,630 traps) and effective effort (the actual number of traps fished, the fishing practice, and the size of the traps). The trap size has increased in all LFAs with LFA 25 having the largest average size. A study of efficiency versus trap size in LFA 23 indicated that larger traps captured more lobster. Hence, a reduction in the nominal effort (effort allowed under the fishery management regulation) would not automatically translate to a reduction in the effective effort (the amount of fishing effort including efficiency in terms of fishing power actually applied in a fishery). This management option was considered difficult to evaluate because of the poor spatial and temporal resolution of the effort data from the fishery. Based on the fishing practice and the proportion of empty traps in the fishery, and the option to increase trap size further within the regulations, an analysis of the amount of effort reduction required to result in a reduction of exploitation would be very uncertain. It was recommended that an exercise to collect such information supplied directly from the fishermen (detailed data on effort, location, time) be initiated based on the experience of the volunteers in the index fisherman program.

Minimum legal size (MLS) regulations were introduced to favour the survival of lobsters to a size where they become sexually mature. An additional regulation prohibiting the retention of egg bearing females protects known reproductive females. Based on the presentations and scientific studies, there is sufficient information available to evaluate the impacts of changes in MLS on egg production. An increase in the MLS will result in a reduced harvest of females which will then have the opportunity to spawn. Under the present management plan, the MLS will be increased to 70 mm by 2005 representing about 35% of first time spawning (primiparous) females. To protect 50% and 100% of these females, the MLS would have to be set at 73 mm and 84 mm, respectively. By itself, this measure would not protect females captured before they have spawned their eggs. The consequence of reduced exploitation on males is not known but they are not expected to be detrimental to the resource.

In LFA 25, females with a one-year reproductive cycle which are in early post-molt, and females that spawn in successive years may be captured in the fishery before the eggs are extruded. Information presented during the meeting was sufficient to evaluate the consequence of a variation in season on potential egg production. Studies indicated that there could be an important component (up to 47%) of females ready to spawn in the catches from the fishery at the start of the season but this declined rapidly to near 0% by the first week of September. In the ensuing discussions, it was indicated that there would be some annual variation in the proportion of females ready to spawn which may be related to water temperatures earlier in the year. Based on the information, a delay in the opening of the season

was felt to be potentially more beneficial to the goal of increasing egg production than only a change in MLS because the delayed opening would protect lobsters over the MLS which had yet to extrude their eggs in early August. The point was raised that declines have been observed in other LFAs in the SGSL that are a spring fishery, so that the consideration of the season by itself may not be sufficient.

Questions and Discussion Points

It was asked whether any work was being conducted or planned on the possible effects of pollution on larval survival since this was another point where recruitment could be affected. It was indicated that some proposals for research on pesticides and lobster larvae were being developed by DFO and other departments but the status of funding for this work was yet unknown. It was also indicated that there are collaborative programs with the Maritime Fishermen's Union (MFU) and the aquarium at Shippagan to assess the benefits of rearing and stocking lobster juveniles at the settlement stage. These studies may fill some of the knowledge gaps on recruitment and survival of the pre-recruit stages.

The data required to provide a biological evaluation of the impacts of changes in MLS and variations in season on egg production are available. The discussion of other factors, including social and economic, was outside the terms of reference of the meeting.

ACKNOWLEDGEMENTS

Thanks to Denise LeBlanc (DFO Oceans and Science) for the organization of the meeting including distribution of notification, meeting room reservation, and collation of these proceedings. Matthew Hardy (DFO Oceans and Science) kept rapporteur notes on the afternoon discussions.

Appendix 1 – Invitation letter

January 16, 2004

Le 16 janvier 2004

Dear Participant:

Cher participant:

On February 3rd, 2004, we will be convening a meeting of the Regional Advisory Process (RAP) to peer review the lobster status in area LFA 25, along the Gulf shores of Prince Edward Island, New Brunswick, and Nova Scotia.

Le 3 février 2004, nous convoquerons une réunion du Processus Consultatif Régional (PCR) pour procéder à un examen par les pairs de l'état des stocks du homard dans la zone LFA 25 le long des côtes du golfe de l'Île-du-Prince-Édouard du Nouveau-Brunswick et de la Nouvelle-Écosse.

The meeting will be chaired by Mr. Gérald Chaput, Head, Diadromous Fish Section, Fisheries and Oceans Canada. The meeting will be held at the Château Moncton, 100 rue Main, Moncton (N.B.), starting at 10:00 A.M. on Tuesday February 3rd. A block of rooms has been reserved for your convenience under the name Fisheries and Oceans Canada for February 2. These rooms will be at your own expense but for the reduced government rate. You can reserve a room by calling (506) 857-9686 before January 30.

M. Gérald Chaput, Chef, section des poissons diadromes, Pêches et Océans Canada, présidera la réunion. La réunion aura lieu au Château Moncton, 100 rue Main, Moncton (N.-B.), et débutera le mardi 3 février à 10h00. Des chambres ont été réservées pour la nuit du 2 février au nom de Pêches et Océans Canada. Ces chambres seront à vos propres frais mais vous permettront de profiter du tarif gouvernemental réduit. Vous pouvez réserver une chambre en composant le (506) 857-9686 avant le 30 janvier.

The remit and agenda for the meeting are attached. I would appreciate if you could confirm your attendance with Denise LeBlanc at (506) 851-6253 by January 30, 2004.

Le mandat ainsi que l'ordre du jour de cette réunion accompagnent cette lettre. Je vous serais reconnaissant de bien vouloir confirmer votre présence auprès de Denise LeBlanc au (506) 851-6253 avant le 30 janvier 2004.

Yours sincerely,

Sincèrement,

Original signed by / copie originale signée par

M. Lanteigne
Manager, Aquatic Resources Division
Gestionnaire, Division des Ressources Aquatiques

c.c. Gérald Chaput, Monique Baker, Marcel Boudreau, Michael Chadwick, David Gillis, Réjean Hébert, Valerie Myra, Robert O'Boyle, FRCC-CCRH (M. Vermette), Rhéal Vienneau

Appendix 2 – Remit

REMIT

Meeting Regional Advisory Process (RAP)
on Lobster (LFA 25)
Thursday, February 3, 2004
Moncton, N.B.

Background

Lobster landings in the southern Gulf of St. Lawrence have been decreasing steadily since the early 1990's. The rate of decrease has been more acute in Lobster Fishing Area (LFA) 25 where catches in 2003 have reached their lowest historical level in some areas. This situation, unique to this summer fishery, needs to be assessed based on the biological and fishery information available in order to identify corrective measures that could help obtain a more sustainable fishery.

Objectives

Status of the fishery and resource for lobster in LFA 25.

Items

Stock/Fishery assessment

Review the historical spatial and temporal trends in landings, effort, catch rates and size composition for the lobster fishery in LFA 25.

Review and evaluate biological and fishery information to conduct a quantitative assessment of the lobster fishery in LFA 25.

Assess the overall female lobster condition and spawning cycle in LFA 25 based on data collected during the 2002 and 2003 fisheries.

An overview of the seasonal and annual trends of the coastal temperature conditions in the LFA 25.

A research document will be produced for this assessment. This document will present the most recent trends in the fishery and resource status for LFA 25.

Participation

Participation will come from the following:

- DFO Science & Fisheries Management
- Provincial governments
- First Nations
- Industry

DEMANDE DE RENVOI

Réunion du processus consultatif régional (PCR)
sur le homard (ZPH 25)
Mardi, 3 février 2004
Moncton, N.-B.

Arrière plan

Dans le sud du golfe du Saint Laurent, les débarquements de homards ont diminué d'une façon continue depuis le début des années 1990. Le taux de diminution a été plus accentué dans la zone 25 de pêche au homard (ZPH 25), où en 2003 certains endroits ont atteint les débarquements les plus bas de leur histoire. Cette situation qui est unique à la pêche d'été, doit être évaluée à l'aide de toute l'information biologique et issue de la pêche. Des mesures pourraient être identifiées afin de corriger certains problèmes et de parvenir à une pêche durable.

Objectifs

Déterminer l'état de la pêche et des ressources d'homard dans la ZPH 25.

Produits

Évaluation de la pêcherie et du stock.

Révision spatiale et temporelle de la tendance historique des débarquements, de l'effort, des prises par unité d'effort et de la distribution de taille pour la pêcherie d'homard dans la ZPH 25.

Révision et l'évaluation de l'information biologique et celle issue de la pêcherie pour procéder à une évaluation quantitative de la pêcherie d'homard dans la ZPH 25.

Évaluation de la condition des homards femelles et du cycle de reproduction de celle-ci dans la ZPH 25. Ceci étant basé sur les données prises en 2002 et 2003.

Un aperçu des tendances annuelles et saisonnières des conditions de températures côtières dans la ZPH 25.

Un document de recherche sera rédigé pour cette évaluation. Ce document présente les tendances à jour de cette pêcherie ainsi que de l'état de cette ressource pour la ZPH 25.

Participation

Les groupes suivant vont être demandé de participer.

- La section des sciences et de la gestion du MPO.
- Gouvernements provinciaux
- Premières nations
- L'industrie

Appendix 3 – Agenda

**The Regional Advisory Process on Lobster (LFA 25) /
Le processus consultative regional sur le homard (ZPH 25)
Château Moncton
100, rue Main Street, Moncton NB
Tel : (506) 870-4444 or 1-800-576-4040**

Tuesday, February 3/ le mardi 3 février, 2004	<u>Time/ Heure</u>	<u>Presenter / présentateur</u>
Word from the chairman / Mot du président	10:00-10:10	Gérald Chaput
Introduction of the stock status for LFA 25/ Introduction de l'état des stocks du ZPH 25	10:10-10:30	Michel Comeau
Overview of coastal temperature / Aperçu de la temperature côtière	10:30-11:00	Fernand Savoie
Results of the trawl surveys in LFA 25, 2001 to 2003 / Résultats de l'échantillonnage par chalutage dans ZPH 25, 2001 à 2003	11:00-12:00	Mark Hanson
Lunch Break	12:00-13:00	
Indicators for the stock status of LFA 25 based on fishery data / Indicateurs de l'état des stocks de ZPH 25 basés sur les données de la pêche.	13:00-14:00	Michel Comeau
The condition of female lobsters in LFA 25 / La condition du homard femelle dans ZPH 25.	14:00-15:00	Michel Comeau
Break	15:00-15:20	
Stock status of LFA 25: Conclusions and recommendations / L'état des stocks ZPH 25: Conclusions et recommandations	15:20-16:00	Michel Comeau

Appendix 4– List of participants

The Regional Advisory Process on Lobster (LFA 25)
Le processus consultatif régional du homard (ZPH 25)
February 3, 2004 / le 3 février 2004

Participant /Participants	Affiliation/ Affiliation	Address/ Adresse	Telephone / Fax Téléphone / Télécopieur	E-mail / Courriel
Gerald Chaput	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506-851-2022	ChaputG@dfo-mpo.gc.ca
Michel Comeau	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506-851-6136	ComeauM@dfo-mpo.gc.ca
Shelton Boudreau	PEIFA	O'Leary, RR# 1 PE C0B 1V0	902-859-2537	
Ronald Caissie	PEIFA	Box 134, RR# 3 Wellington, PE C0B 2E0	902-854-2743	Rjcaissie@hotmail.com
Peter Murphy	PEIFA	Elmsdale RR#1, PE C0B 1K0	902-853-3648	
Douglas Pezzack	DFO/MPO	B.I.O. Dartmouth, NS	902-426-2099	Pezzack@mardfo-mpo.gc.ca
Robert McMillan	PEI Dept. Agriculture, Fish., Aquac. & Forest.	P.O. Box 2000, Charlottetown, PE C1A 7N8	902-368-5593	Rjmacmillan@gov.pe.ca
Reginald Comeau	MFU/UPM	P.O. Box 4084, Tracadie-Sheila, NB E1C 3G0	506-395-6366	upmmfu@nb.com
J.Mark Hanson	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-2047	HansonM@dfo-mpo.gc.ca
Fernand Savoie	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506-851-6049	SavoieF@dfo-mpo.gc.ca
Bruno Comeau	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506-851-6146	comeaub@dfo-mpo.gc.ca
Gilles Paulin	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506-851-6150	Pauling@dfo-mpo.gc.ca
Manon Mallet	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506-851-6132	malletM@dfo-mpo.gc.ca
Ron Cormier	MFU/UPM	408 Main St. Shediac NB E4P 2G1	506-576-2485	
Sandy Siegal	MFU/UPM	408 Main St. Shediac	506-532-2485	

Participant /Participants	Affiliation/ Affiliation	Address/ Adresse	Telephone / Fax Téléphone / Télécopieur	E-mail / Courriel
		NB E4P 2G1		
Bernard Mazerolle	MFU/UPM	659 Chemin St.Ignace St.-Louis, NB E4X 1X5	506-876-4411	
Donald Martin	MFU/UPM	320 Ch.Cape de St.Louis St. Louis, NB E4X 1P8	506-876-2540	
Sylvio Richard	MFU/UPM	3760 Route 530 Grande-Digue, NB E4R 5P7	506-576-9346	
Brian Stright	MFU/UPM	1336 Route 955 Murray Corner NB E4M 3M1	506-538-2902	
Eben Elliott	Gulf NS Fishermen Coalition	RR#3 Wallace, NS B0K 1Y0	902-243-3103	
Arthur Carl	Fishermen LFA 25	539 Champlain St. Dieppe, NB E1A 1P2	506-856-5102	
Patrice Landry	Proc. Cape Bald Packers	P.O. Box 2618, Ch. Acadie Cape-Pele, NB E4N 1E3	506-577-4316	PLandry@capebaldpackers.c om
Jeannine Dupuis	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506-851-7490	
Michel Albert	DFO/MPO	C.P. 3420 Bureau Secteur Tracadie-Sheila NB E1X 1G5	506-395-7718	
Rory McLellan	PEIFA	420 Universite Ave, Charlottetown, PE C1A 7Z5	902-566-4050	managerpeifa@pei.easlink.ca
Keith Paugh	PEIFA	P.O.Box 234, Oleary, PE C0B 1V0	902-859-3838	
Angelina Cool	NB Seafood Proc. Ass.	1133 boul. St. George bur. 420 Moncton, NB E1E 4E1	506-861-9072	
Danny Langis	Paturel International	69 Cap Bimet blvd., PO Box 5004 Shediac, NB E4P 8T8	506-532-4431	dlangis@paturel.ca
Bill Waterman	Paturel International	69 Cap Bimet blvd., PO Box 5004 Shediac, NB E4P 8T8	506-532-4431	Wwaterman@myseafood.com
Joseph LaBelle	NBAFA	26 Acadie, Bouctouche NB	506-743-7222	Josephlabelle@gnb.ca
Colin MacIsaac	DFO /MPO	P.O.Box 1236, Charlottetown PE C1A 7M8	902-566-7815	macisaacc@dfo-mpo.gc.ca

Participant /Participants	Affiliation/ Affiliation	Address/ Adresse	Telephone / Fax Téléphone / Télécopieur	E-mail / Courriel
Sandra Gaudet	DFO /MPO	P.O.Box 1236, Charlottetown PE C1A 7M8	902-566-7810	gaudets@dfo-mpo.gc.ca
John Hanlon	DFO/MPO	Area Office, 113 Church St. Antigonish, NS B2G 2E3	902-863-5670	hanlonj@dfo-mpo.gc.ca
Edmond Drysdale	UPM/MFU	408 rue Principale, Shediac, NB E4P 1G1	506-532-2487	shediac@mfu-upm.com
Michel Richard	UPM/MFU	5 Victory St. Apt.21 Moncton, NB E1C 3H1	506-532-2487	Michel@upm-mfu.com
Pierre Gautreau	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-6833	GautreauP@dfo-mpo.gc.ca
Monique Baker	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-6234	BakerM@dfo-mpo.gc.ca
Michel Thérien	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-7704	TherienM@dfo-mpo.gc.ca
Marc Lanteigne	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-6212	LanteigneM@dfo-mpo.gc.ca
Wade Perley	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-2059	PerleyW@dfo-mpo.gc.ca
Matthew Hardy	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-2650	HardyM@dfo-mpo.gc.ca
Marc LeCouffe	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-7845	LecouffeM@dfo-mpo.gc.ca
Jerry Amirault	Maritime Lobster Processors	11434 River John Rd. Tatamagouche, NS B0K 1V0	902-657-0226	Jerry.amirault@ns.sympatico. ca
Tom Arsenault	Cape Bald Packers	Cape Pele, NB E4N 1Z3	506-577-4316	TArsenault@capebaldpackers .cm
Kevin MacNeil	PEIFA	RR# 1 O'Leary. PE C0B 1V0	902-859-1296	Kevin.Wanda@pei.sympatico. ca
Alvin Hackett	PEIFA	P.O.Box 271, Tignish, PE C0B 2B0	902-882-2143	
Denis Gallant	Fish LFA 25	1214 Route 530, Grande- Digue NB E4R 5L2	506-576-7740	
Denis Gagnon	DFO/MPO	343 Université Ave. Moncton, NB E1C 9B6	506- 851-6048	GagnonD@dfo-mpo.gc.ca