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Canadian Science Advisory Secretariat

Proceedings Series 2009/025

S C C S

Secrétariat canadien de consultation scientifique

Compte rendu 2009/025

**Regional Advisory Process (RAP)
DFO, Newfoundland and Labrador
Region Atlantic Herring (Div. 3KL3Ps)
Capelin (SuEbarea 2 + 3KL)
Proceedings**

**November 3-5, 2008
Fisheries and Oceans Canada
Northwest Atlantic Fisheries Centre
St. John's, Newfoundland and
Labrador**

**F. Mowbray (Chair)
and G. H. Winters (Rapporteur)**

**Compte rendu du Processus de
consultation scientifique régional
(PCSR) du MPO sur le hareng de
l'Atlantique de la Région de Terre-Neuve
et du Labrador (div. 3KL3Ps) et sur le
capelan (sous-zone 2 + 3KL)**

**Du 3 au 5 novembre 2008 Pêches et
Océans Canada Centre des pêches de
l'Atlantique Nord-Ouest St. John's,
Terre-Neuve-et-Labrador**

**F. Mowbray (président)
et G. H. Winters (rapporteur)**

Fisheries and Oceans Canada / Pêches et Océans Canada
Science Branch
PO Box 5667, NWAFC, 80 White Hills Road East
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November 2009

Novembre 2009

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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ISSN 1701-1272 (Printed / Imprimé)
ISSN 1701-1280 (Online / En ligne)

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

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

DFO. 2009. Proceedings of the Newfoundland and Labrador Regional Advisory Process for Atlantic Herring (Div. 3KL3Ps) and Capelin (Subarea 2 + 3KL); November 3-5, 2008. DFO Can. Sci. Advis. Sec. Proceed. Ser. 2009/025.

TABLE OF CONTENTS / TABLE DES MATIÈRES

SUMMARY	v
SOMMAIRE	v
HERRING (Div. 3KLPs).....	1
INTRODUCTION.....	1
WORKING PAPER SUMMARIES AND RELATED DISCUSSIONS	2
PROGRESS ON RESEARCH RECOMMENDATIONS FROM THE 2006 RAP	5
RESEARCH RECOMMENDATIONS FROM THE 2008 RAP	7
CAPELIN (Subarea 2 + 3KL)	8
INTRODUCTION.....	8
PRESENTATION SUMMARIES AND RELATED DISCUSSIONS	8
RESEARCH RECOMMENDATIONS FROM THE 2008 RAP	10
Appendix I: Terms of Reference	11
Appendix II: List of Participants	13
Appendix III: List of Working Papers.....	16

SUMMARY

During November 2008, DFO Newfoundland and Labrador Region conducted assessments of the White Bay - Notre Dame Bay, Bonavista Bay - Trinity Bay, St. Mary's Bay - Placentia Bay and Fortune Bay Atlantic herring (*Clupea harengus*) stocks and the NAFO Subarea 2 + 3KL capelin (*Mallotus villosus*) stock. Summaries of the omnibus herring working paper and ensuing discussions are provided, as well as research recommendations intended to reduce current uncertainties and to increase the analytical power of the next herring assessment. The status of capelin in Subarea 2 + 3KL was assessed in response to a request from DFO Fisheries and Aquaculture Management for an update on stock status since the last assessment report in 2001. Summaries of new information available since then are provided, as well as conservation issues that may impinge on the 2009 – 2011 capelin management plan.

Also included are the remit and terms of reference, a list of participants, and a list of working papers. Additional information on the resources assessed is available in the Science Advisory Report (SAR) and Research Document Series.

SOMMAIRE

En novembre 2008, le Région de Terre-Neuve et du Labrador du MPO a effectué des évaluations des stocks de hareng (*Clupea harengus*) de la baie White – baie Notre Dame, de la baie de Bonavista – baie de la Trinité, de la baie St. Mary's – baie de Plaisance et de la baie de Fortune ainsi que du stock de capelan (*Mallotus villosus*) de la sous-zone 2 + 3KL. Le présent document comporte des résumés du document de travail d'ensemble concernant le hareng et des discussions auxquelles il a donné lieu ainsi que des recommandations sur des recherches qui pourraient contribuer à réduire les incertitudes actuelles et à augmenter le pouvoir analytique de la prochaine évaluation du hareng. On a évalué l'état du capelan de la sous-zone 2 + 3KL à la requête de Gestion des pêches et de l'aquaculture du MPO, qui avait demandé que soit mis à jour l'état du stock, la dernière évaluation ayant été effectuée en 2001. Des résumés de la nouvelle information disponible ainsi que des enjeux relatifs à la conservation qui peuvent avoir une incidence sur le plan de gestion du capelan de 2009 – 2011 sont fournis.

Sont également inclus le cadre de référence, une liste des participants ainsi qu'une liste des documents de travail. Des renseignements supplémentaires sur les ressources évaluées sont disponibles dans les séries d'avis scientifiques et de documents de recherche.

HERRING (Div. 3KLPs)

INTRODUCTION

A meeting of the Newfoundland and Labrador Regional Advisory Process (RAP) was held 1-3 November 2008 in the Members Lounge, Clovelly Golf Course, St. John's, Newfoundland. Full assessments of the White Bay - Notre Dame Bay, Bonavista Bay - Trinity Bay, St. Mary's Bay - Placentia Bay and Fortune Bay Atlantic herring stocks were conducted.

Newfoundland herring stocks are assessed bi-annually to provide input for the two year herring management plan, the next of which is planned for the 2009 and 2010 fisheries. These stocks were last assessed in November 2006.

Summaries of the comprehensive working paper containing assessments of 4 herring stocks and ensuing discussions are provided. In addition, a detailed list of research recommendations, remedial to identified analytical shortfalls and to mitigate future assessment uncertainties, is provided.

Summary points for the herring assessments are as follows:

As in the 2006 assessment, performance reports, including evaluation of five abundance indices and biological characteristics, were used to assess the current status and prospects of each stock.

In this assessment, ADAPT calibrations were completed for spring and fall spawners for each stock area. The results of these calibrations were rejected for all areas based upon large parameter errors and residual patterns of indices. Otherwise, the methodology to describe stock status was similar to the 2006 assessment.

Retrospective performance reports were prepared back to 1997. All performance reports were standardized to allow for inter-annual comparisons.

Based on performance reports, stock status has improved from 2002 to 2008 for White Bay - Notre Dame Bay whereas for Bonavista Bay - Trinity Bay, stock status improved from 2002 to 2007, but deteriorated in 2008. For St. Mary's Bay - Placentia Bay, stock status deteriorated from 2002 to 2004, improved slightly in 2005 and deteriorated slightly from 2005 to 2008. For Fortune Bay, stock status deteriorated from 2001 to 2004, improved slightly in 2005, deteriorated again in 2006 and has remained stable since then. For all areas, current abundance is substantially lower than peak estimates, most of which occurred in the 1970s.

Most year classes produced during the 1990's were generally weak, contributing to the low abundance. The 2002 year class was dominant in 2007 research gill net catches in all areas. There was no dominant year class across all areas in the commercial catches.

New analyses of length-at-age and body condition showed that these indices decreased concurrently with changes in maturation. The results indirectly support the hypothesis that that these populations have evolved a different maturation strategy.

Current management measures include a minimum allowable fish size of 29 cm in the commercial fishery. This was set in the 1970s and approximated the length at 50% maturity. Over the past decade, the length of 50% maturity has declined significantly and has elicited concerns from harvesters that the minimum allowable size be reduced. The merits of this proposal were discussed.

WORKING PAPER SUMMARIES AND RELATED DISCUSSIONS

Working Paper 1: An Assessment of Newfoundland East and South Coast Herring Stocks to the Spring of 2008. J. P. Wheeler, B. Squires and P. Williams.

Presenter: John Wheeler (DFO Science)

ABSTRACT

This document provides an assessment of four herring stocks to the spring of 2008. These include White Bay - Notre Dame Bay (WB-NDB), Bonavista Bay - Trinity Bay (BB-TB), St Mary's - Placentia Bay (SMB-PB), and Fortune Bay (FB); Conception Bay - Southern Shore (CB-SS) was excluded due to lack of data.

Commercial landings increased from 6500 t in 2006 to 6600 t in 2007 which represented about 53% of the 2007 Total Allowable Catch (TAC). Spring-spawners accounted for 55% of the commercial landings in all areas in 2007; this represented an increase from 2006. The 2002 year class was dominant in 2007 research gill net catches in all areas.

Five series of abundance indices were available for most of the stock areas; these were similar to those used in the 2006 assessment. In addition, ADAPT calibrations were completed for spring and fall spawners for all stock areas. The results of these calibrations were rejected for all areas due to large parameter error estimates and strong residual patterns in the statistical fits.

Current status and future prospects were summarized for each stock area in a performance report. These reports were based on standardized interpretation of abundance indices, biological characteristics, and ecological considerations.

For White Bay - Notre Dame Bay, stock status improved from 2002 to 2008. For Bonavista Bay - Trinity Bay, stock status deteriorated in 2008 relative to the 2002-07 period. For St Mary's Bay - Placentia Bay, stock status deteriorated slightly from 2005 to 2008. For Fortune Bay, stock status deteriorated from 2001 to 2004, improved slightly in 2005, deteriorated again in 2006 and has remained stable since then. For all stocks, current abundances are substantially below peak estimates, most of which occurred in the 1970s.

DISCUSSION

Review of Indices

The assessment of herring stocks along eastern and southern Newfoundland continues to contain considerable uncertainties. These uncertainties are mainly due to the inability to quantify the absolute level of current stock sizes and exploitation rates, and to place those estimates within an historical context. The indices upon which stock forecasts are currently made are uncertain, due to a variety of factors which can be variously described as follows.

Interpretation of research gillnet trends relative to historical data remains confounded by decadal changes in growth and maturity rates, implying systematic changes in both selection at size and at age. Only a single season is fished and the intensity of sampling is low, with some areas like St Mary's Bay – Placentia Bay having only 2 harvesters.

Commercial gillnet catch rates are likely confounded by growth and maturity induced changes in selectivity, and sample sizes are small. In addition, these may be an index of fishing performance rather than stock abundance.

Telephone surveys of harvesters opinions of changes in herring abundance suffer from possible perceptual bias due to variable history in the fishery. The addition of phone surveys for bait and commercial harvesters in 2006 has considerably increased sample sizes. Also, modifications to survey design have removed some of the interpretation uncertainties.

Acoustic surveys are of limited scientific value when biomass levels are low, due to the patchiness of herring distributions and the increased likelihood that significant concentrations could be missed. No surveys have been conducted in recent years.

In general, some coherence was evident amongst the various indices over the last decade or so in White Bay – Notre Dame Bay and Bonavista Bay – Trinity Bay, less so in St Mary's Bay - Placentia Bay, with intermediate coherence in Fortune Bay. This period coincides with stability in the growth rates, with implications that changes in selectivity may have moderated.

Assessment Summary

White Bay - Notre Dame Bay

Research gill net catch rates were lower, but not significantly, in 2008 than in 2006 and 61% of the long-term mean.

Commercial gill net catch rates increased, but not significantly, from 2006 to 2008. However, the 2008 catch rate was 261% of the long-term mean and the highest in the series, consistent with harvesters' observations of abundance.

Gill net harvesters indicated that herring abundance was higher in 2008 than 2007.

Only 2 purse seine harvesters were active in 2007; they indicated that herring abundance in the fall of 2007 was slightly lower than in 2006.

Research gill net catch rates since 1982 indicated that 4 of the 7 current mature year classes were average or below the average. The 2003 recruiting year class was below average and the 2004 year class could not yet be quantified.

A standardized performance index is available for 1997 to 2008. The composite index indicated that stock status has improved from 2002 to 2008.

Short-term prospects for the stock outlook are uncertain; the 2003 year class is below average, and equal numbers of mature year classes are above and below the average since 1982 but weak compared to historical levels.

Bonavista Bay - Trinity Bay

Research gill net catch rates were lower, but not significantly, in 2008 than in 2006 and 124% of the long-term mean.

Only 3 commercial gill net logbooks were returned in 2008. Catch rates in those decreased, but not significantly, from 2006 to 2008; the 2008 catch rate was 55% of the long-term mean.

Gill net harvesters indicated that herring abundance was higher in 2008 than 2007.

Purse seine harvesters indicated that herring abundance in the fall of 2007 was higher than in 2006.

Research gill net catch rates since 1982 indicated that 5 of the 7 current mature year classes were above average. The 2003 recruiting year class was below average and the 2004 year class could not yet be quantified.

A standardized performance index is available for 1997 to 2008. The composite index indicated that stock status improved from 2002 to 2007 but deteriorated in 2008.

Short-term prospects for the stock outlook are uncertain; the 2003 year class is below average but most mature year classes are above the average since 1982, but weak compared to historical levels.

St. Mary's Bay – Placentia Bay

Research gill net catch rates were lower, but not significantly, in 2008 than in 2006 and 17% of the long-term mean.

Commercial gill net catch rates increased, but not significantly, from 2006 to 2008; the 2008 catch rate was 196% of the long-term mean.

Gill net harvesters indicated that herring abundance was higher in 2008 than 2007. Only 2 purse seine harvesters were active in 2008; they indicated that herring abundance in the spring of 2008 was higher than in 2007.

Research gill net catch rates since 1976 indicated that 5 of the 7 current mature year classes were below average. The 2003 recruiting year class was below average and the 2004 year class could not yet be quantified.

A standardized performance index is available for 1997 to 2008. The composite index indicated that stock status has deteriorated slightly since 2005.

Short-term prospects for the stock outlook are negative; the 2003 year class is below average and most mature year classes are below the average since 1976 and weak compared to historical levels.

Fortune Bay

Research gill net catch rates were lower, but not significantly, in 2008 than in 2006 and 58% of the long-term mean.

Commercial gill net catch rates increased, but not significantly, from 2006 to 2008; the 2008 catch rate was 129% of the long-term mean.

Gill net harvesters indicated that herring abundance was lower in 2008 than 2007.

Research gill net catch rates since 1976 indicated that 5 of the 7 current mature year classes were average or below average. The 2003 recruiting year class was below average and the 2004 year class could not yet be quantified.

A standardized performance index is available for 1997 to 2008. The composite index indicated that stock status has been stable since 2006.

Short-term prospects for the stock outlook are negative; the 2003 year class is below average and most mature year classes are average or below average.

PROGRESS ON RESEARCH RECOMMENDATIONS FROM THE 2006 RAP

1. The research gill net catch rates are likely confounded by systematic changes in growth and maturation rates that have occurred since their inception. It is recommended that standardized estimates of year class and year effects be extracted from these data, using statistical models that permit the age-mesh size interaction to be quantified.

Progress: There was no progress on this recommendation. Instead, it will be completed in time for the assessment frame-work review in 2009.

2. The commercial logbook abundance index suffers from very low return rates. It is recommended that return rates could be increased by sending out reminders subsequent to the initial request. It is also recommended that, should this be implemented, secondary and tertiary logbook data be analyzed separately from that of the initial collection to ensure internal consistency of the full data series.

Progress: This was done for both 2007 and 2008 and comparisons were made of logbooks received prior to and after reminder letters.

3. The gill net telephone survey has common respondents to those who submit commercial gill net logbooks. The consistency between observed (logbook) catch rates and oral statements of annual abundance changes, by common respondents, should be examined by statistical analyses of these two data sets.

Progress: This was completed for the common set of gill net harvesters who participated in the phone survey and who also submitted logbooks.

4. The gill net phone survey may be confounded by differing reference periods from which current year estimates are compared. It is recommended that future surveys include a standard reference period, including an additional question on the respondents fishing history.

Progress: A new cumulative index was derived to address the issue of differing reference periods. Commencing in 2007, harvesters were asked to provide additional information on the number of nets that they fished, the number of times the nets were hauled, and the total amount of herring caught.

5. These herring populations have undergone significant changes in growth, maturity and spawning group classifications over the past several decades. It is recommended that a research document be prepared for the 2008 assessment in which changes in these vital rates are analyzed in relation to a variety of potential causative hypotheses.

Progress: A manuscript has been completed and is undergoing external peer review prior to publication. A presentation of this paper was made to the RAP attendees.

6. A variety of abundance indices are available for these stocks, some of which are data based and others which are opinion based. It is recommended that the coherence of these various indices be statistically examined so as to clarify interpretative significance and as a guide to index weighting factors.

Progress: Sensitivity analyses were done to examine the impacts of weighting procedures and exclusion of opinion based surveys.

7. Sequential population analyses (SPA) models provide a useful window through which current abundance and exploitation rates can be compared with retrospective levels. Such models have not been used in recent assessments of these stocks for a variety of reasons, including low catch levels. The Committee felt that it would be useful to re-examine the utility of these models, including variants that may be constrained by earlier acoustic estimates.

Progress: A series of ADAPT formulations were run for both spring and fall spawners for each of the stock areas. Model fits were unacceptable due mainly to low exploitation ratios.

RESEARCH RECOMMENDATIONS FROM THE 2008 RAP

Although significant progress has been made to address the deficiencies in the assessment of herring stocks along eastern and southern Newfoundland, considerable uncertainties remain. These uncertainties are mainly due to the inability to estimate current stock sizes and exploitation rates, and to place these estimates within an historical context.

Empirical estimates of stock size, such as by acoustic surveys, are the preferred source of current stock sizes. However, given the perceived low level of current abundance, such surveys would have limited chances for success, due to the contagious nature of herring concentrations which would increase the likelihood that major concentrations could be missed. ADAPT calibrations performed at the 2008 RAP meeting provided unacceptable fits that largely accrue from low exploitation ratios. Unfortunately most of the indices used do not extend backwards to periods of higher abundance and high fishing mortality rates.

These difficulties cannot easily be overcome in the absence of substantial fisheries and a substantially expanded research program. Progress may be achieved towards these objectives through the following recommendations:

1. Continue to evaluate the utility of sequential population models, as a basis for estimating current and historical population sizes. Other models such as ICA, FLICA, and SURBA should be considered in addition to ADAPT. Better fits may be possible if all bait catches are added to the catch-at-age matrix and if acoustic estimates are used to constrain model output.
2. The fall research gill net series provides an historical perspective of changes in herring abundance but has not been statistically linked to the more recent spring gill net series. Such a linkage should be attempted.
3. Should funds permit, special research programs such as a combination of acoustic and mark-recapture surveys should be considered for selected stocks in which fishery removals are temporarily elevated.
4. Should funds permit, the spring research gill net program should be expanded beyond a 30 day period and the fall research program should be re-instated.
5. Continue to evaluate the reliability of all current indices, eliminating those that fail abundance coherence tests while attempting to boost sampling rates for those that best meet random and unbiased estimation standards.

CAPELIN (Subarea 2 + 3KL)

INTRODUCTION

The status of capelin in Subarea 2 and Div. 3KL was last assessed in 2001. At the 2008 RAP meeting, the status of capelin was updated in response to a request from Fisheries and Aquaculture Management to provide the Minister with advice on this capelin stock.

PRESENTATION SUMMARIES AND RELATED DISCUSSIONS

There were no working papers presented at the meeting. Instead, there were two PowerPoint presentations, an omnibus review of recent biological and research findings in inshore areas by Dr. B. Nakashima and a review of the offshore abundance and distribution indices (Div.3L spring acoustic surveys and Div. 2J3KL multi-species survey) by F. Mowbray. These are summarized in point form below.

Inshore Status Review Presentation

- The fishery has changed significantly over the past decade with the introduction of tuck seines and the diminution of trap catches.
- Discarding in the commercial fishery has been substantially reduced due to Provincial regulations requiring full utilization by processors and to monitoring for the availability of marketable capelin prior to opening areas to fishing.
- Since 1991, mean capelin sizes (length and weight) in the commercial fishery have declined significantly with no trend of a recovery to pre-1991 levels.
- Likewise, mean age is now approximately 2.5 years which is one year less than in pre-1991 levels, with no discernible recovery.
- These growth and life-table changes have not responded to increases in water temperatures since the mid 1990s, indicating that other factors are over-riding the expected temperature response.
- Spawning diaries from 6 capelin spawning beaches show that peak spawning times remain delayed by about 3-4 weeks.
- Egg deposition rates have been continuously estimated for Bellevue Beach since 1990. The 2007 estimate was above average.
- Likewise, the estimate of emergent larvae at Bellevue Beach was above average in 2007.
- There is no statistical correlation between egg deposition at Bellevue Beach and subsequent abundance of emergent larvae, indicating that environmental factors are driving inter-annual changes in larval survival.
- Inshore migration patterns now lack the temporal patterns evident in the pre-1991 period when spawning began earlier in southern areas.
- The number of stock abundance indices has been considerably reduced over the past decade, due to the elimination of the fall capelin acoustic survey in Div. 2J3K, the aerial survey of spawning schools, the offshore fall juvenile survey, and the reduction in the number of spawning beach surveys from seven to one. As a consequence, a quantitative assessment of capelin abundance in Subarea 2 and Div. 3KL is no longer possible.

Offshore Abundance Indices

- The spring acoustic survey in Div. 3KL has been conducted since 1985 and was originally designed to estimate the strength of recruiting year classes as part of the annual analytical assessment. Since 1999, its main objectives have been to monitor offshore distribution changes, to collect biological samples and to provide additional information on predator-prey interactions.
- Over the past decade, the survey has been significantly improved due to technology advances, such that technology related errors (e.g., calibration precision, transducer advances) are now reduced. As well, the survey area has been expanded to include areas to the north and to the east.
- New analyses of historical data on the spatial distribution of capelin in Div. 3L have shown major changes since the late 1980s. Capelin now form up into much smaller schools that have lower densities and are much more dispersed than in the 1980s.
- Vertical and diurnal migration patterns have also been altered since the 1980s. Capelin are now being found in much deeper water, are staying much closer to the bottom, and the intensity of diurnal migrations is much reduced.
- A new acoustic survey abundance estimation model which models the variability associated with calibration techniques, target strength and spatial patterns, as well as correcting for detection probability, was applied to historic and current survey data.
- The modeled index shows that significant inter-annual changes have occurred over the time series. Surveys since 1999 continue to show much reduced abundances in Div. 3L, although there is a slight upward trend in the past 2 years. The relationship between the Div. 3L acoustic estimates and actual abundance is uncertain as only a portion of the total stock area is surveyed. Surveys repeated within the same year indicate that timing is not the main cause of inter-annual differences.
- The fall offshore multi-species bottom trawl survey has been conducted in Divs. 2J3KL since the late 1970s. Since 1995, the survey has used the Campelen trawl which has a different selectivity pattern than the Engels. Consequently, indices from the two periods cannot be compared directly.
- The value of bottom trawl surveys for pelagic fish is questionable. An age disaggregated model was presented but cohorts could not be tracked, and age of maximum recruitment to the survey varied amongst cohorts. Consequently it was suggested that the bottom trawl abundance index must be considered as highly uncertain. The index demonstrated an increasing trend in the trawlable biomass estimates since 1999, with 2006 and 2007 being the highest on record.
- The bottom trawl survey also provides coarse but comprehensive information on distribution changes. Kriged probability of occurrence (presence/absence) maps showed marked changes in distribution over the past several decades, with a southward shift into Div. 3L in the late 1980s, a more northerly shift in the late 1990s, and high variability with no net displacement thereafter.
- The mean probability of occurrence increased from 1981-94, and has varied around a constant high level since switching to the Campelen trawl in 1995. This may be due to the nature of the data treatment (too low a catch threshold) or to behavior changes (diel migration changes).

RESEARCH RECOMMENDATIONS FROM THE 2008 RAP

1. More resources are required for Science to provide quantitative advice on trends in capelin abundance and to evaluate population impacts of current fishery removals.
2. The number of capelin spawning beaches being surveyed should be increased to evaluate if Bellevue Beach is representative of capelin beaches throughout the stock area.
3. The effect of different occurrence thresholds on the mean probability of occurrence and distribution trends from fall bottom trawl survey data should be investigated.
4. The survey design of the spring Div. 3L acoustic survey should continue to be refined, including the choice of core strata.

Appendix I: Terms of Reference

2008 Herring and Capelin RAP Remit and Terms of Reference

**Regional Advisory Process (RAP)
DFO, Newfoundland and Labrador Region
Herring (Div. 3KL and Subdiv. 3Ps) and
Capelin (Subarea 2 + Div. 3KL)**

**Members Lounge, Clovelly Golf Course, Stavanger Drive
St. John's, Newfoundland and Labrador
November 3-5, 2008**

Meeting Chairperson: Fran Mowbray, Aquatic Resources Division, Science Branch,
DFO, Newfoundland and Labrador Region.

TERMS OF REFERENCE

Context

The status of herring in Div. 3KL and Subdivision 3Ps was last assessed in 2006 (refer to SAR 2006/042: http://www.dfo-mpo.gc.ca/csas/Csas/status/2006/SAR-AS2006_042_e.pdf; and Proceedings 2006/045: http://www.dfo-mpo.gc.ca/csas/Csas/Proceedings/2006/PRO2006_045_E.pdf). The status of capelin in Subarea 2 and Div. 3KL was last assessed in 2001 (refer to SAR 2001/B2-02: http://www.dfo-mpo.gc.ca/csas/Csas/status/2001/SSR2001_B2-02e.pdf). The current assessments are requested by Fisheries and Aquaculture Management to provide the Minister with detailed advice on the status of these stocks.

Objectives

A review of any new information available concerning the status of **East and South Newfoundland Herring** as follows:

- White Bay – Notre Dame Bay
- Bonavista Bay – Trinity Bay
- St. Mary's Bay – Placentia Bay
- Fortune Bay

The meeting will focus on the general state of herring stocks in Newfoundland and Labrador and identify any conservation issues requiring adjustments to the management plan.

The following topics will be discussed:

- Description of the 2006 and 2007 Commercial Fisheries (and 2008 to date)
- Results of the Herring Research Gill Net Program for 2006 – 2008
- Results from Herring Commercial Fixed Gear Logbooks for 2006 – 2008
- Results of the Herring Purse Seine Questionnaires for 2006 – 2008

- Examination of Biological and Ecological Data for 2006 -2008
- An analytical assessment will be attempted for White Bay – Notre Dame Bay, Bonavista Bay – Trinity Bay, St. Mary's Bay – Placentia Bay, and Fortune Bay
- Analysis of herring age and length data in relation to age at maturity

To the extent possible an assessment of the stock status of **Subarea 2 + Div. 3KL capelin** will be reviewed.

The following topics will be discussed:

- Observations from the 2007 Fishery and Research data.
- Information on historical catches including the 2008 fishery. Information on the length/weight/age of capelin from these fisheries will be available from 1980-2007.
- 2007 Bellevue Capelin Spawning Project
- Spring Acoustic Survey
- Multi-species Survey
- Seabird-Capelin Interactions (To be confirmed with MUN)

Products

Two science advisory reports (SARs) will be produced from this meeting, one for Div. 3KL and Subdiv. 3Ps herring and the second for Subarea 2 + Div. 3KL capelin. A single proceedings report will detail the meeting discussions, and at least two associated research documents will be produced as a result of this meeting.

Role of Participants

The Department is endeavouring 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 discussion 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.

Appendix II: List of Participants

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**Appendix III: List of Working Papers
(subsequently upgrade to a Research Document)**

Wheeler, J. P, B. Squires, and P. Williams. 2008. An assessment of Newfoundland east and south coast herring stocks to the spring of 2008. DFO Can. Sci. Advis. Sec. Res. Doc. 2008/070, 120 p.