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**Proceedings of the Regional Advisory
Process for the Exploratory Fishery
Protocol – Nunavut and Northwest
Territories Anadromous Arctic Charr**

**13-14 January, 2010
Freshwater Institute
Winnipeg, MB**

**R.F. Tallman and T. Carmichael
Meeting Co-chairs**

**L.N. Harris
Editor**

**Compte rendu du Processus de
consultation scientifique régional sur le
protocole de pêche exploratoire à
l'omble chevalier anadrome du Nunavut
et des Territoires du Nord-Ouest**

**Les 13 et 14 janvier 2010
Institut des eaux douces
Winnipeg, Man.**

**R.F. Tallman et T. Carmichael
Co-présidents de la réunion**

**L.N. Harris
Rédacteur**

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501 University Crescent / 501, University Crescent
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September 2010

Septembre 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 contenues dans le présent rapport puissent être inexactes ou propres à induire en erreur, elles sont quand même reproduites aussi fidèlement que possible afin de refléter les échanges tenus au cours de la réunion. Ainsi, aucune partie de ce rapport ne doit être considérée 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

Fisheries and Oceans Canada's (DFO) Fisheries and Aquaculture Management (FAM) requested Science review and advice on the exploratory fishery protocol for anadromous Arctic Charr of Nunavut (NU) and the Northwest Territories (NT). A protocol for the biological and catch-per-unit-effort (CPUE) data required to properly assess a stock under an exploratory licence was established and last revised in 2003 for the Central and Arctic Region. In light of the New Emerging Fisheries Policy (<http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/efp-pnp-eng.htm#2>), FAM asked that the protocol be reviewed and updated as necessary. The existing protocol was not meant to cover the variety of species for which exploratory licences may now be requested. Each species (or group of similar species) would require separate sampling protocols to identify the specific information required for assessments.

The meeting to review the protocol for Arctic Char took place January 13-14, 2010 at the Freshwater Institute in Winnipeg, MB. Participants included DFO Science and FAM sectors, the Lake Winnipeg Research Consortium Inc., Kavik-Axys Inc. and the Universities of Manitoba. The protocol was reviewed and recommendations were made on the type and amount of data needed i.e., the optimal sampling level for stock assessment. The level of certainty in the conclusions that might result from an assessment of these data was considered. The review included an assessment of the short-comings of the current exploratory protocol and a comparative analysis of the statistical validity of sampling options. This proceedings report summarizes the relevant discussions and presents the key conclusions reached at the peer-review meetings.

Science advice resulting from the meeting is published in the Science Advisory Report series and the supporting data analyses are published in the Research Document series.

SOMMAIRE

Gestion des pêches et de l'aquaculture (GPA), de Pêches et Océans Canada (MPO), a demandé au secteur des Sciences de procéder à l'examen du protocole de pêche exploratoire à l'omble chevalier anadrome du Nunavut (NU) et des Territoires du Nord-Ouest (T.N.-O) et de formuler un avis à cet égard. Le protocole relatif aux données biologiques et aux données sur les prises par unité d'effort (PUE) requises pour évaluer de façon appropriée les stocks visés par un permis de pêche exploratoire a été mis à jour pour la dernière fois en 2003 pour la Région du Centre et de l'Arctique. Compte tenu de la Politique sur les nouvelles pêches (<http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/efp-pnp-fra.htm>), GPA a demandé que ce protocole soit passé en revue et mis à jour au besoin, car il ne couvre pas l'éventail d'espèces pour lesquelles il est maintenant possible de demander un permis de pêche exploratoire. En effet, des protocoles d'échantillonnage propres à chaque espèce (ou groupe d'espèces similaires) sont nécessaires afin que l'on puisse préciser l'information particulière requise pour les évaluations.

La réunion d'examen du protocole pour l'omble chevalier a eu lieu les 13 et 14 janvier 2010 à l'Institut des eaux douces de Winnipeg, au Manitoba. Les participants provenaient notamment du secteur des Sciences du MPO et de GPA, du Lake Winnipeg Research Consortium Inc., de Kavik-Axys Inc. et des universités du Manitoba. Le protocole a été passé en revue et des recommandations ont été formulées quant au type et au volume de données requises, c.-à-d. le degré d'échantillonnage optimal pour l'évaluation des stocks. Le degré de certitude des conclusions qui pourraient résulter d'une évaluation de ces données a aussi été examiné. L'examen a aussi comporté une évaluation des lacunes de l'actuel protocole de pêche exploratoire et une analyse comparative de la validité statistique des options d'échantillonnage. Le présent compte rendu résume les discussions tenues et expose les principales conclusions formulées au cours de cette réunion d'examen par des pairs.

L'avis scientifique découlant de la réunion est publié dans la série des avis scientifiques, tandis que les analyses des données à l'appui sont publiées dans la série des documents de recherche.

INTRODUCTION

The five-year exploratory fisheries protocol currently used by Fisheries and Oceans Canada (DFO) Central and Arctic Region's Fisheries and Aquaculture Management (FAM) sector was established in 1973. This protocol was initially established as a test fishery program to evaluate the commercial feasibility of anadromous Arctic Charr stocks. The protocol was developed by the Fishery Management Division, Department of the Environment (now Fisheries & Oceans Canada (DFO)), in cooperation with the Wildlife Service, Government of the Northwest Territories (GNWT), to facilitate the development of new commercial fisheries (Kristofferson and McGowan 1981, McGowan 1985). This program involved establishing initial quotas for potential commercial waterbodies, identifying possible problems and collecting biological data to be used in an assessment of the harvested stock.

The New Emerging Fisheries Policy (<http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/efp-pnp-eng.htm#2>), developed in 1996, is a three stage process that outlines requirements that have to be met and the procedures that have to be followed before a new fishery can be initiated. Under this process, the exploratory stage (Stage II) is conducted to assess whether a species/stock can sustain a commercially viable operation and to collect biological data in order to build a preliminary database on stock abundance and distribution.

The exploratory fishery protocol was last revised in 2003 and requires updating given the variety of species now under exploratory licence and the three-stage *New Emerging Fisheries Policy*. As such, a Regional Advisory Process (RAP) meeting was held to re-assess the exploratory sampling protocol to ensure it outlines the biological information that needs to be collected and assessed to determine commercial potential of various stocks.

The purpose of this meeting, as described in the Terms of Reference (Appendix 1), was to review the current Stage II Exploratory Fishery licence conditions to determine if the information requested will be sufficient to provide an assessment of the impact of the harvest level on the fish stock and thereby determine if the level of harvest is sustainable over the long-term. Upon review of the protocol and the new issues surrounding it, it was determined that the existing protocol is not sufficient to cover the variety of species that are now encountered and that each species (or group of similar species/life history types) would require independent sampling protocols to provide the specific information required to properly assess each stock.

Meeting participants (Appendix 2) included DFO Science (Stock Assessment) and FAM sectors of the Central and Arctic Region. Additional participants included specialists from the University of Manitoba and the public sector. The meeting generally followed the agenda outlined in Appendix 3.

The meeting took place at the Freshwater Institute in Winnipeg and was convened on 13 January 2010 at 9:30 AM. This proceedings report summarizes the relevant discussions and presents the key conclusions reached during the peer review meetings. The research document provides background information considered and discussed during the meetings and the Science Advisory Report (SAR) is the summary of advice developed at the meeting.

DETAILED DISCUSSION

WELCOME AND OPENING REMARKS

Presented by R. Tallman

After performing a round of introductions, participants were given a brief introduction to the meeting including a summary of the request from FAM for re-assessment of the exploratory fishery protocol. This was followed by a detailed overview of the New Emerging Fisheries Policy (<http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/efp-pnp-eng.htm#2>). The RAP process was explained along with the goal of producing a Science Advisory Report, Proceedings and research document from the meeting. The draft research document was the basis for discussion on the first day and participants were encouraged to add to or change the material, as needed, to ensure that the best and most up-to-date information was included.

DRAFT RESEARCH DOCUMENT

Presented by M. VanGerwen-Toyne

On the first day of the Regional Advisory Process meeting, the draft research document (i.e., the working paper) was presented by sections. It was made clear that participants were to focus on the general content of each section and the methods used for the assessment and not on editorial changes and suggestions. Discussion, questions and concerns that were raised are described below.

Abstract

Participants indicated that the material presented in this section needed to be formatted more like a typical abstract. It needed to be more precise and to include a description of the Exploratory Fishery Protocol and how it relates to the New Emerging Fishery Policy. Additionally, it was suggested that the abstract needed to include a description of some of the results of the assessment and implementation of this potential protocol.

Introduction

Participants felt the introduction lacked some relevant background information. It was suggested that detailed descriptions of the initial test fisheries be included. This was followed by discussion of the mesh sizes used in gillnets that were used during the initial test fisheries. It was then suggested that a detailed description of the types of gear used for harvesting Arctic Charr (e.g., gillnets (including mesh sizes), weirs, etc.) be included.

One participant suggested that a description of the various Arctic Charr life histories or ecotypes be included (i.e., lake dwelling vs anadromous) although this idea was rejected given that this re-assessment focuses on anadromous populations.

It was suggested that the introduction provide information on the status of current commercial fisheries in Nunavut (NU) and the Northwest Territories (NT) and how these commercial fisheries are conducted. For example, the number of commercial and exploratory licences that are currently held and whether these are summer or winter fisheries would be pertinent information. Participants also agreed that the number of exploratory fisheries that have been converted to commercial fisheries would be pertinent background information, including a note that mentions these are constantly changing.

One participant described how these initial quotas were typically determined. This was done by obtaining an estimate of productivity (e.g., number of fish/ha) and then using those data to set a provisional quota. This would then be followed by adaptive management of the fishery. It was, however, thought that this information does not necessarily have to be included in the introduction. Last, one participant wanted a reference to the sustainable fisheries framework to be included (PA, stewardship, checklists, etc.).

There was consensus among the meeting participants on the final content of the introduction section.

Assessment – Estimate of Stock Size

This section provided an overview of how estimates of stock size are important for determining what the sustainable removal level would be. It was generally agreed that the collection of this information is difficult given the logistical constraints of conducting stock assessment work in the Arctic. One participant suggested the use of weirs, as has been used in other Arctic systems (e.g., Cambridge Bay fisheries), to estimate stock size. There was consensus that this is undoubtedly a good idea, but such an endeavour would be expensive. If funding permits, it was suggested that weirs be used on stocks identified as a “priority”.

Given that abundance estimates are rarely available for most Arctic Charr fisheries, it was agreed that estimates of catch-per-unit-effort (CPUE) would have to suffice as an index of abundance. The assumptions of using CPUE as an index of abundance were discussed and it was concluded that these assumptions are rarely met when conducting fisheries research. It was suggested that it might be worthwhile mentioning that assumptions are rarely met and that actions are taken to minimize departures from such assumptions (e.g., consistency in timing of sampling and the sampling gear used). It was also suggested that a figure could be included that shows how CPUE and abundance are correlated.

Participants then discussed the importance of accurate data recording. For example, for accurate CPUE calculations the specific dimensions of the net need to be recorded. If multiple nets are used (e.g., multi-mesh panels that consist of one net) then it was recommended that each panel's dimensions be recorded. These data should be recorded in the fisher log books, but this rarely happens. It was suggested that meetings with fishers take place to determine why these data are not recorded/reported to ensure this information is collected during future exploratory fisheries. Last, it was mentioned that the focus of this meeting is not to enforce rules/regulations but rather to layout what information is needed from those fishing under an exploratory licence. It was concluded that if the appropriate information that DFO requests is not provided then commercial fishery status may not be attained.

Assessment – Biological Data

Participants were asked to review how the health of a stock is often assessed using biological data, such as through the monitoring of age or length frequency distributions (cohort analyses), population growth, or mortality. It was concluded that the biological data requested for Arctic Charr from fishers in NU and NT with a Stage II Exploratory licence (fork length, round weight, sex, and sagittal otoliths for age determination) is sufficient for assessment purposes. However, the number of those samples collected required some revision.

Number of Samples of Biological Data to Collect

The protocol on the most recent licences for 2009 states 200 fish be sampled for fork length, round weight, and sex but only 100 otoliths are required. It was suggested that weight and length data from 200 fish are sufficient for stock assessment purposes but the sampling of 100 otoliths, and thus age determination for 100 fish, is not sufficient to characterize Arctic Charr age structure. A resampling exercise was presented to highlight this fact. An age frequency histogram for the actual data collected from 200 aged Charr was presented. The data were randomly resampled with replacement to include only 100 ages from the original data set. The exercise was repeated three times and the results showed that when only 100 ages are used the histogram mis-represents the actual distribution. There was consensus among all participants that the collection of 200 otoliths be included in the revised exploratory fishery protocol. It was suggested that the figures should be removed from the document as a description of how sampling of 100 otoliths may mis-represent age structure can be described clearly in the text without figures. It was also suggested that the resampling scheme be clearly explained (e.g., with vs without replacement). Other suggestions were made on alternative ways to do this comparison and it was suggested these could be included in the research document, rather than the SAR.

Total Instantaneous Mortality

For the most part, participants indicated that the total instantaneous mortality material presented in this section was accurate. One participant recommended a description of the values of total instantaneous mortality be included i.e., what would be considered a high or low level of mortality. They mentioned that it might be valuable to the readers if references were included. Additionally, one participant pointed out that it is unclear whether the modal age, or the modal age plus one, was used for the regression of the descending limb of the curve. This needed to be clarified.

Growth

Participants indicated that the material presented in this section was accurate for the most part but that the equation for the von Bertalanffy growth curve should be provided in the text. Additionally, it was indicated that a reference for the figure be included and that the parameters for the growth equation be redefined.

Duration of Biological Data Collection

Participants were asked to review the section. Participants gave several suggestions on the duration of biological sampling. Participants agreed there should be mention of how to ensure there is spatial representation of the sample. There was a detailed discussion of why five years of data are required for an effective assessment. It was concluded that five (or more) years of biological data collection would allow biologists to see an effect on the harvested population potentially resulting from fishing. It was suggested that the importance of stratifying the biological sampling of harvested fish throughout the run be discussed. Additionally, a section should be added highlighting the potential biases in the data that might result from a non-stratified sampling regime. For example, data might be biased if female fish congregate and migrate upstream before males, and only the first part of the run is sampled.

Frequency of Biological Data Collection

The section on the frequency of biological data collection describes how the most recent Stage II Exploratory licence requires biological data to be collected in the first and fifth year of the fishery. It was suggested that to achieve the optimal and most robust analyses, data should be collected every year for a series of consecutive years. If the data are not collected consistently the portion of data collected would have to be reviewed to determine if there is enough information to make an assessment. All participants agreed that increasing the number of years in which data are collected would allow for the most informative analyses. This is not likely to happen given time and funding constraints or refocusing of research priorities. Finally, it was agreed that it should be stated in the document that five years is the minimum and not the maximum number of years needed. The data should be examined after five years and a decision made whether to open the fishery under a commercial licence or collect subsequent years of data under an exploratory licence.

Other Considerations

Participants suggested that a few of the considerations be expanded (e.g., describe what the limitations are if different gear types are used).

This concluded the first day of the Regional Advisory Process meeting on the reassessment of the exploratory fishery protocol.

REVIEW OF THE SCIENCE ADVISORY REPORT (SAR)

On the second day of the Regional Advisory Process, participants were asked review the Science Advisory Report (SAR) to be produced from the meeting. Presentations were not made, but the document was projected onto a screen, and participants given time to review the document section by section. Following the review of each section, discussion time was allocated. The Chair made clear to meeting participants that this was a review of the wording included in the SAR. Methodological and interpretation concerns were dealt with the previous day as part of the thorough review of the draft research document. Discussions, questions and concerns that were raised subsequent to the review of each section are described below.

Title, Images and Context sections

Both the title and Arctic Charr image were considered suitable for the document. Participants agreed that the map of Canada highlighting Nunavut and the Northwest Territories could be included, but the projection of the map needed to be changed as, the projection of the current map centers the focus on southern Canada and not the territories discussed in the SAR. Participants reviewed and agreed with the content included in the context section. Some minor editorial changes and revisions to sentence structure were incorporated in the finalized version.

Summary

Participants reviewed and agreed with the summary bullets (i.e., summarized advice) in the draft SAR. It was recommended that it should state fish be selected for biological processing in a “stratified”, instead of a “random” manner. This was changed for the finalized version.

Background¹

With the exception of some minor editorial suggestions, the participants agreed with the content included in the background section of the draft SAR. The general consensus among participants was that this section provided relevant background information, and there were no major revisions or changes.

Introduction

Participants reviewed the introduction to the draft SAR and several editorial changes were incorporated into the final document. It was agreed that the general content provided in the introduction was sufficient. Participants however, suggested that a better description of the request for science advice from FAM be included, and how the response to this request was addressed by DFO Science. This advice was incorporated and included at the end of the introduction.

Assessment

Determining effects of exploitation on a stock

Participants reviewed and agreed with the content included in the section on determining the effects of exploitation on a stock.

CPUE

Participants reviewed and agreed with the content included in the section on CPUE. CPUE information should be collected each year of the 5-yr exploratory licence.

Biological Data - Number of Samples to Collect

Upon review of this section several editorial suggestions were recommended and then incorporated into the final version of the SAR. It was agreed that the general content was sufficient and specifically, that fork length, round weight, sex, and otoliths be collected for 200 Arctic Charr every year of the 5-yr exploratory period. This should be included in the revised exploratory fishery protocol. This was illustrated using the resampling procedure described earlier. It was suggested that the figure used to illustrate this point be modified so each is labelled with a letter (e.g., Fig. 2a, Fig. 2b). The SAR was changed to reflect this suggestion.

There was discussion that the resampling exercise might not clarify the point that if 100 samples were used instead of 200 the age structure might be mis-represented. This was suggested because the modal ages were the same in all figures. However, the shapes of the distributions themselves are drastically different. It was clear that the Figure 2d example did over-represent the common age groups and under-represent the younger and older age groups and that this would then have major implications, for example, when calculating the instantaneous rate of mortality. As such, it was agreed the resampling exercise be included in the documents generated from the RAP.

¹ During the meeting the Background and Introduction were two sections although in the final SAR they were combined into a single section.

Biological Data - Instantaneous Rate of Mortality

Participants agreed with the content presented in this section. It was pointed out that the formula for calculating instantaneous mortality was incorrect and should be written as the natural logarithm (ln) and not the log. This was changed for the final SAR. Additionally, there was consensus to remove Figure 4, as it was essentially described quite well in the text.

Biological Data - Growth

Participants reviewed and agreed with the content included in the section on growth. The only revision to this section was the redefining of the Von Bertalanffy growth equation parameters.

Biological Data - Duration of Biological Sampling

Participants reviewed and agreed with the content included in the section on duration of biological sampling. Only minor editorial revisions were suggested and these were incorporated in the final version of the SAR.

Biological Data - Frequency of Biological Sampling

Participants reviewed and agreed with the content included in the section on frequency of biological sampling. Some minor editorial suggestions were incorporated. Additionally, upon review of this section, participants discussed the importance of fishing to the full quota for the duration of the exploratory status, and the need for fishers to record and/or provide an explanation as to why quotas are not reached in years when this occurs. As such, a statement, requiring explanations be provided in the case of such an event, was incorporated into the document.

Bycatch Species

Participants reviewed and agreed with the content included in the section on bycatch species. Only minor editorial revisions were suggested and these were incorporated in the final version of the SAR.

Conclusions and Advice

Participants reviewed and agreed with the content included in the section on conclusions and advice. Only minor editorial revisions were suggested and these were incorporated in the final version of the SAR.

Other Considerations

Participants agreed the information presented in this section did not particularly fit the description of "Other Considerations". As such, this section was modified to include some of the other points addressed in the document. This revised bulleted points that were incorporated into the final SAR including:

- At the end of the five-year exploratory stage an assessment will be made, however the data may be insufficient to determine the biological sustainability of the fishery.
- Data collection may vary among resource users.
- Other sources of mortality during the course of sampling should be noted.

-
- Where harvesters are willing to collect supplemental information (e.g., environmental and biological information), this should be encouraged.

Another consideration discussed was the implementation of the protocol. There had been some difficulties experienced with this in the past. It was discussed that certain communities could benefit from more training to assist with the proper collection of the required information.

SOURCES OF INFORMATION

- Kristofferson, A.H., and D.K. McGowan. 1981. Data on Arctic Char, *Salvelinus alpinus* (Linnaeus), collected from test fisheries in the Baffin Region, Northwest Territories, 1975-79. Can. Data Rep. Fish. Aquat. Sci. 255: vi + 43 p.
- McGowan, D.K. 1985. Data from test fisheries conducted in the Baffin and Central Arctic Regions, Northwest Territories, 1980-84. Can. Data Rep. Fish. Aquat. Sci. 531: v + 68 p.

APPENDIX 1. TERMS OF REFERENCE

Meeting of the Central & Arctic Regional Advisory Process (RAP) on Exploratory Fishery Protocol - Nunavut and Northwest Territories Anadromous Arctic Charr, Jan 13-14, 2010.

Freshwater Institute, 501 University Crescent
Winnipeg

Meeting Co-Chairs: Theresa Carmichael and Ross Tallman

Background

Fisheries and Aquaculture Management, Central & Arctic Region, has submitted a Request for Advice to Central & Arctic Science, Stock Assessment which reads:

Central & Arctic's five-year exploratory fishery has been in place for many years and was initially developed for freshwater/anadromous finfish species. Given the variety of species now under exploratory license, and the three-stage emerging fisheries policy, the exploratory sampling protocol needs to be re-assessed to ensure it outlines the biological information that needs to be collected and assessed to determine commercial potential of various stocks.

As part of the response to this request for advice, it was determined that the existing protocol is not sufficient to cover the variety of species that are now encountered and that each species (or group of similar species/life history types) would require independent protocols to provide the specific information required to properly assess the stock. As a first step in this process, we will conduct a peer review of the scientific rationale for sampling anadromous Arctic Charr in the Nunavut and the Northwest Territories for a Stage II exploratory fishery under the New Emerging Fisheries Policy. One of the objectives for Stage II exploratory fisheries is to determine whether a species/stock can sustain a commercially viable operation. A peer review of inshore Turbot and an overview protocol for all species will also be conducted in the near future but will not be included in this meeting.

Objectives

- 1) An analysis of options for recording of catch per unit effort and biological sampling of Anadromous Arctic Charr by the NU and NWT resource users (Stage 2 exploratory fishery) will be presented to determine the optimal sampling level for stock assessment will be reviewed. Included in the review will be the following:
 - A) Assessment of the short-comings of the current exploratory protocol.
 - B) Comparative analysis of the sampling options with respect to statistical validity.

The outcome will be reviewed in terms of the new Emerging Fisheries policy

Products

A Science Advisory Report, Proceedings Report, and associated Research Document will be produced as a result of this meeting.

Invited Participants

Agencies:

DFO Fisheries and Aquaculture Management (FAM)
DFO Science
Fisheries Joint Management Committee (FJMC)
Alaska Fish and Game
University of Manitoba topic expert
University of British Columbia topic expert
Nunavut Government
Gwich'in Renewable Resource Board (GRRB)
Nunavut Wildlife Management Board (NWMB)
Other topic experts

**Note that agency representatives must come with demonstrated expertise to the topic*

APPENDIX 2. LIST OF PARTICIPANTS

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APPENDIX 3. AGENDA

Regional Advisory Process for the Exploratory Fishery Protocol – Nunavut and Northwest Territories Anadromous Arctic Charr

**Day 1:13 January 2010, from 9:00 a.m. to 5:00 p.m. (Central Daylight Time)
Freshwater Institute, Winnipeg, MB**

9:00 Introductions (round table)

9:10 Welcome and opening remarks by Ross Tallman

9:15 Introductions, review of agenda, RAP process explanation, responsibilities of participants and comments from participants.

9:30 Begin Melanie VanGerwen-Toyne presentation review of the draft research document (i.e., the working paper)

10:35 Abstract

10:50 Introduction

11:00 Coffee Break

11:10 Estimate of Stock Size

11:30 Biological Data – Number of Samples of Biological Data to Collect

12:00 Lunch

13:00 Continue Biological Data – Number of Samples of Biological Data to Collect

13:30 Biological Data – Total Instantaneous Mortality

13:50 Biological Data – Growth

14:30 Duration of Sampling

15:45 *Coffee break*

15:55 Frequency of Sampling

16:15 Other Considerations

16:45 Meeting adjourns

Day 2:14 January 2010, from 9:00 a.m. to 5:00 p.m. (Central Daylight Time)
Freshwater Institute, Winnipeg, MB

9:00 Introductions (round table)

9:05 Begin Review of the Science Advisory Report (SAR)

9:10 Title, Images and Context sections

9:40 Summary

10:00 Background

10:20 Introduction

10:45 Coffee Break

11:00 Determining effects of exploitation on a stock

11:15 CPUE

11:30 Biological Data - Number of Samples to Collect

12:00 Lunch

13:30 Biological Data - Instantaneous Rate of Mortality

14:00 Biological Data - Growth

14:20 Biological Data - Duration of Biological Sampling

14:40 Biological Data - Frequency of Biological Sampling

15:00 Coffee Break

15:15 Bycatch Species

15:30 Conclusions and Advice

15:40 Other Considerations

16:15 Closing of meeting - Summary of the editorial and approval process for Science Advisory Report, Proceedings and Working Paper.

16:45 Meeting Adjourned