
NOTICE

Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results

WORKSHOP

4–6 September 1996
St. Petersburg, Russia

**NEW ANNOUNCEMENT
GIVING
NEW VENUE**

This Workshop, with H. Lassen (EU–Denmark) as convener, will be held in conjunction with the NAFO 18th Annual Meeting. NOTE – MEETING LOCATION HAS BEEN CHANGED (FROM PREVIOUS ANNOUNCEMENT – DARTMOUTH, NOVA SCOTIA, CANADA) TO ST. PETERSBURG, RUSSIA.

Observing that the states of most groundfish stocks in NAFO Subareas 1–3 are very poor, the Scientific Council sees the urgent need to consider fishery independent methods of stock assessment. The importance of abundance surveys for fish stock assessment is increasing, as there are serious problems with the quality of available catch statistics and there are several important stocks under moratoria for which no fishery data are generated. Under the circumstances, abundance survey data are the only available reliable source of information on stock status.

The NAFO Scientific Council is particularly fortunate that there are extensive survey databases available for most of the important fish stocks in the Regulatory Area. The Workshop will focus on the bottom-trawl surveys on the groundfish stocks, for which there are good time-series databases available.

- Objectives:**
- To further the stock assessment methods by improving on analyses of fish distributions observed during abundance surveys. The relation between distribution of fish and the environmental conditions during surveys shall get special attention.
 - To further the work on how to assess stocks under moratoria, i.e. assessment of fish stocks based on survey data only.
 - To present an overview of techniques available for these types of analyses. The lecturing material will be considered for publication in NAFO Studies/Journal.

Format: The Workshop will be in two sessions. Each session will be introduced by a keynote speaker, followed by topic lectures, introduction to software and discussion, and completed with participant analysis of case study data with hands-on work on their own portable PCs. The Workshop will be concluded by a general discussion in plenum to summarize the findings.

Session 1: The influence of survey/rawl design, standardization and performance (duration, wing- and door-spread, warp length, etc.) on catchability. Relation to horizontal and vertical fish distribution (trawl/acoustic survey techniques) and fish behaviour will be discussed. Estimation of geographical distribution of fish (kriging, isoline, spline) and its relation to environmental parameters observed during the surveys.

Session 2: Derive estimates of absolute abundance from bottom trawl survey results (swept area, q projection). Effect of biotic and abiotic factors on catchability to obtain unbiased abundance indices for a time series.

The Workshop will deal with 3–4 case studies, e.g. Cod (EU survey on Flemish Cap, German survey on West Greenland), Shrimp (Greenland survey in Subarea 1), and A. plaice (Canadian survey in Div. 3L), on haul-by-haul information supplemented by environmental data (e.g. S, T, O₂ and currents).

Participants: The Workshop is open to the general scientific community, although participants are informed it is primarily aimed at the NAFO Scientific Council members. Considering the hands-on nature of the Workshop, the total number of participants will be limited.

For further information or to express interest in participation, please contact one of the following. Further details on the program and practical information will be supplied only to intended participants. The participant list will be finalized by July 1996.

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NOTICE

What Future for Capture Fisheries

SYMPOSIUM

A Shift in Paradigm: Visioning Sustainable Harvests From the Northwest Atlantic in the Twenty First Century

Hosted by the Scientific Council of the
Northwest Atlantic Fisheries Organization (NAFO)

10–12 September 1997

St. John's, Newfoundland, Canada

Objectives:

1. Present the international profile of NAFO – a model of international collaborative research, management and cooperation.
2. Undertake a visioning exercise of sustainable international fisheries cooperation and management for the twenty first century.
3. Examine shifts in the traditional capture fisheries and new livelihoods for the coastal community.
4. Produce a book, based on the outcome of the symposium – commemorating 500 years of Northwest Atlantic livelihoods based on harvesting the sea.

The Symposium itself is built around an Opening Session with three keynote speakers and five sessions.

- Opening Session: Keynote** The NAFO model of international collaborative research, management and cooperation.
- Keynote** The framework within which capture fisheries will operate in the future – Development of UNCLOS 1982.
- Keynote** Sustainability – Ecological impact from fisheries – the political environmental issues and how this will affect how capture fisheries will operate in the future.

Session 1 – Management Approaches – Caring for the Future Resources

1. Trends in international cooperation in fisheries – monitoring, surveillance and control.
2. Controlling marine fisheries 50 years from now – satellite surveillance or a changed regime – can economy and biology cooperate.
3. Geographical case studies – the future for fishery dependent communities (e.g. Iceland, Faroe Island, Greenland, Newfoundland).

Session 2 – History of Fishing the Northwest Atlantic

1. History of fisheries in the Northwest Atlantic – the 500-year perspective.
2. The history of fisheries management and the scientific advice – the ICNAF/NAFO history from the end of WW2 to the present.

Session 3 – Fisheries Research: Perspectives for the Twenty First Century

1. Where is fisheries science heading – special emphasis on fish stock assessment work.
2. What can technology offer the future fisheries scientist – possibilities for obtaining better estimates of fish stock abundance (e.g. observations from the sea) and their stock structure (e.g. DNA technology). What can information technology and science offer – will we be able to process the mass of data future technology will enable us to collect.
3. Integrating fisheries observations with environmental data – towards a better understanding of the conditions for fish in the sea.

Session 4 – Sustainable Livelihood for the Coastal Community

1. Aquaculture vs marine fisheries – will capture fisheries remain competitive?
2. Impact on coastal livelihood from future changes in production and demand for fish.

Session 5 – The Future for Capture Fisheries

1. The capture technology of the future – large trawlers with sea going factories or small vessels of the Coastal State.

This Symposium is being held in conjunction with the Cabot 500th Anniversary Celebration in St. John's, Newfoundland. For further information, please contact:

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NOTICE

Microfiche of ICNAF Meeting Documents, 1951–79

The International Commission for the Northwest Atlantic Fisheries (ICNAF) came into being in July 1950, and the first annual meeting took place at Washington, USA, in April 1951. From that time until the termination of ICNAF in 1979 (29 annual meetings and numerous special and midterm meetings), documentation of research and statistical activities grew as the Commission's interest expanded from developing the groundwork for scientific investigation of the marine living resources during the 1950s and 1960s to managing more than 70 fish and invertebrate stocks in the Northwest Atlantic during the 1970s, until the 200-mile fishery conservation zones of the coastal states were implemented in 1977. However, ICNAF continued until 1979, when it was replaced by the Northwest Atlantic Fisheries Organization (NAFO).

Under the ICNAF regime, it was the mandate of the Standing Committee on Research and Statistics (STACRES) to keep under review and provide regular assessments of the exploited stocks, and to develop policies and procedures for the collection, compilation, analysis and dissemination of fishery statistics in the Convention Area and adjacent waters. Thousands of meeting documents were generated during the 30-year life of ICNAF, most of which were scientific in nature. The Scientific Council of NAFO recognized the historical value of this long series of ICNAF documents and, in 1983, recommended that all papers related to fishery science and statistics should be assembled and copied on microfiche.

Before 1965, all ICNAF documents were designated "Meeting Documents", with no distinction between documents presented at scientific meetings and those for consideration by Commissioners.

During 1965–72, documents were issued in two series, designated as "Commission Documents" and "Research Documents". During 1973–79, further division occurred with the issue of "Summary Documents". The microfiche series contains all documents from 1951–64, all Research and a few relevant Commission documents for 1965–72, and all Research and Summary documents for 1973–79. The task of locating and preparing the papers for microfiche began in early 1985 and was completed in late 1986. Nearly 2,700 documents (31,500 pages) have been recorded on 632 fiche (98-page format, negative). When organizing the material, an index fiche was included to start the series for each year, to provide the user with ready access to the authors and titles of papers and the document numbers. The title strip on each fiche is color-coded by document series, and contains the name of the document series, the year of issue and the document number(s).

A limited number of microfiche sets are available for immediate shipment on a "first come, first served" basis. When the current supply has been exhausted, subsequent orders will involve a delay of approximately 4–5 weeks before delivery.

The price of a set of ICNAF microfiche is \$ 770.00 Canadian which includes delivery by first-class mail in Canada and by airmail to all other countries. Payment in Canadian funds should accompany the order. Please address orders and make cheque (or money order) payable to:

Northwest Atlantic Fisheries Organization
P. O. Box 638, Dartmouth, Nova Scotia
Canada B2Y 3Y9

Information for Authors in Preparing Manuscripts for NAFO Scientific Publications

General Guidelines

The manuscript should be typed in English on white paper, preferably 21.5 x 28 cm (8.5 x 11 in.), on one side only. All typing should be double-spaced with at least 2.5 cm margins around the page. Avoid breaking words at the end of lines. Number all pages, including the title page, consecutively with arabic numbers in the center of the top margin. The sequence of the material should be: title page, abstract, text, references, tables, captions for figures, and figures.

Content of Manuscript

Title page

This page should contain the title, followed by the name(s) and address(es) of the author(s) including professional affiliation, and any related footnotes. Limit the title to what is documented in the manuscript, and keep it as concise as possible.

Abstract

An informative abstract must be provided, which does not exceed one double-spaced page or about 250 words, the ultimate length being dependent on the size of the manuscript. The abstract should concisely indicate the content and emphasis of the paper. It should begin with the main conclusion from the study and be supported by statements of relevant findings. It is important that the abstract accurately reflect the paper's contents, because it is often separated from the main body of the paper by abstracting and indexing services.

Text

In general, the text should be organized into Introduction, Materials and Methods, Results, Discussion, Acknowledgements and References. Authors should be guided by the organization of papers that have been published in the NAFO Journal or Studies and by such authorities as the Council of Biological Editors Style Manual (CBE, 9650 Rockville Pike, Bethesda, MD 20814, USA). The Introduction should be limited to the purpose and rationale of the study, with literature review and other information limited to what is needed to define the problem. The Materials and Methods should provide the framework for obtaining answers to the problems which concern the purpose of the study. The Results should answer the questions evolving from the purpose of the study in a comprehensive manner, avoiding any confusion between facts and inferences and the restatement of table and figure captions in the text. The Discussion should give the main contributions

from the study, with appropriate interpretation and comparison with those of other authors. Speculation should be limited to what can be supported with reasonable evidence, in the case of short papers, it is often useful to combine Results and Discussion to avoid repetition. Acknowledgements should be limited to the names of individuals who provided significant scientific and technical support, including reviews, during the preparation of the manuscript, and the names of agencies which provided financial support.

Mathematical equations and formulae must be accurately stated, with clear definitions of the various letters and symbols. If logarithmic expressions are used, the type of function (base 10 or natural logarithms) must be clearly indicated in the text or by appropriate symbols (" \log_{10} " or "log" for ordinary logarithms, and " \log_e " or "ln" for natural logarithms).

References

Good judgment should be used in the selection of references, which must be restricted largely to significant published literature. References to unpublished data and documents, manuscripts in preparation, and manuscripts submitted to other journals (if not yet accepted for a particular issue) must not be cited in the list of references but may be noted in the text as unpublished data or personal communications (with full mailing address of the authors). Citation of meeting documents which have limited circulation should be avoided whenever possible, except when such documents contain significant new findings for which no other published sources of the information exist.

Literature references cited in the text must be by author's surname and year of publication, e.g. (Collins, 1960). The surnames of two authors may be used in a citation, but, if more than two authors are involved the citation should be (Collins *et al.*, 1960). The citation of mimeographed manuscript reports and meeting documents should contain the abbreviation "MS", e.g. (Collins *et al.*, MS 1960). All papers referred to in the text must be cited in the References alphabetically by the author's surname and initials, followed by the initials and surnames of other authors, year of publication, full title of the paper, name of the periodical, volume and/or number, and range of pages. Abbreviations of periodicals should, if possible, follow the "World List of Aquatic Sciences and Fisheries Serials Titles", published periodically by FAO (Food and Agriculture

Organization of the United Nations). References to monographs should, in addition to the author(s), year and title, contain the name and place of the publisher and the number of pages in the volume. Reference to a paper in a book containing a collection of papers should also contain the page range of the paper, name(s) of editor(s), and actual title of the book. The accuracy of all references and their correspondence with text citations is the responsibility of the author.

Tables

All tables must be discussed or mentioned in the text. Tables should be carefully constructed so that the data presented in them are clearly understood and that they fit within either a column or page of the periodical. Each table should start on a separate page and be headed by a description which, together with the column headings, makes the table intelligible with reference to the text. Tables must be numbered consecutively in arabic numerals, which correspond with the order of presentation in the text. The required position of tables in the text should be indicated in the left margin of the relevant page. Place the tables after the list of references.

Figures

All figures must be referred to or discussed in the text. Each figure in the form of illustration or photograph must be on a separate sheet and numbered consecutively with arabic numerals.

The figure number should be clearly indicated on the back or in the bottom margin of each illustration. Figure captions should be typed on a separate sheet which follows the tables in paging sequence. The approximate location of each figure in the text should be indicated in the left margin of the relevant page. A complete set of originals or clear, good quality copies must accompany the original of the manuscript and good quality photocopies must be appended to the other copies for review purposes.

When preparing figures, consideration should be given to details such as shading and lettering with respect to the effects of reduction in size to a page width (17 cm) or a single column width (8 cm) (e.g. lettering should not be overbearing or too small). Ideally dimensions of figures should not exceed 17 cm x 20 cm. If over-sized figures are necessary, only good quality page-size photocopies should be submitted and the large originals should be retained by the author and submitted only if requested by the Associate Editor or the NAFO Secretariat. If the paper contains photographs which

will not photocopy clearly (e.g. poor contrast photographs), a set of such photographs must accompany each copy of the manuscript. Colour photographs are expensive to reproduce in colour and should be avoided if possible. If they are essential to the understanding of the text, the author will be required to pay for the additional cost of reproduction.

Manuscript Submission

Journal of Northwest Atlantic Fishery Science

The Journal provides a forum for the primary publication of original research papers. While it is intended to be regional in scope, papers of general applicability and methodology, irrespective of region, may be considered. Both practical and theoretical papers are eligible. Space is also provided for notes, letters to the editor and notices.

Manuscripts are considered for publication with the understanding that their content is unpublished and is not being submitted elsewhere for publication. Each manuscript is assigned to an Associate Editor for scientific editing and is normally reviewed by two referees for appraisal regarding its suitability as a primary article. Submissions (original and three copies) should be addressed to:

Assistant Executive Secretary
Northwest Atlantic Fisheries Organization
P. O. Box 638
Dartmouth, Nova Scotia
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NAFO Scientific Council Studies

The Studies publishes papers which are of topical interest and importance to the current and future activities of the Scientific Council, but which are not considered to be sufficiently high quality to meet the standards for primary publication in the Journal. Such papers have usually been presented as research documents at Scientific Council meetings and nominated for publication by the Standing Committee on Publications. These manuscripts are not normally refereed but undergo critical scrutiny by the Studies editor and if necessary by an expert familiar with the subject matter. Manuscripts (one copy only) should be addressed to:

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Scientific Publications of the Northwest Atlantic Fisheries Organization

Journal of Northwest Atlantic Fishery Science

The Journal provides an international forum for the primary publication of original research papers on fisheries science in the Northwest Atlantic, with emphasis on environmental, biological, ecological and fishery aspects of the living marine resources and ecosystems.

- Vol. 1 – Miscellaneous papers (10), December 1980, 112 pp.
- Vol. 2 – Miscellaneous papers (10), October 1981, 76 pp.
- Vol. 3, No. 1, 2 – Miscellaneous papers (17), May and December 1982, 180 pp.
- Vol. 4 – Special issue “Guide to the Early Stages of Marine Fishes Occurring in the Western North Atlantic Ocean, Cape Hatteras to the Southern Scotian Shelf”, July 1983, 424 pp.
- Vol. 5, No. 1, 2 – Miscellaneous papers, (26), January and November 1984, 224 pp.
- Vol. 6, No. 1, 2 – Miscellaneous papers, (17), June and December 1985, 179 pp.
- Vol. 7, No. 1, 2 – Miscellaneous papers, (18), December 1986 and December 1987, 177 pp.
- Vol. 8 – Miscellaneous papers, (7), December 1988, 88 pp.
- Vol. 9 – Miscellaneous papers, (13), September and December 1989, 159 pp.
- Vol. 10 – Special issue “The Delimitation of Fishing Areas in the Northwest Atlantic”, December 1990, 57 pp.
- Vol. 11 – Miscellaneous papers, (7), February 1991, 80 pp.
- Vol. 12 – Miscellaneous papers, (7), January 1992, 84 pp.
- Vol. 13 – Miscellaneous papers, (7), December 1992, 114 pp.
- Vol. 14 – Symposium papers (12), on “Changes in Biomass, Production and Species Composition of the Fish Populations in the Northwest Atlantic over the Last 30 Years, and Their Possible Causes”, December 1992, 160 pp.
- Vol. 15 – Special issue “Decapod Crustacean Larvae from Ungava Bay”, December 1993, 170 pp.
- Vol. 16 – Miscellaneous papers (7), July 1994, 100 pp.
- Vol. 17 – Miscellaneous papers (6), October 1994, 78 pp.

NAFO Scientific Council Studies

This secondary publication includes papers of topical interest and importance to the current and future activities of the Scientific Council.

- No. 1 – Miscellaneous papers (11), March 1981, 101 pp.
- No. 2 – Manual on Groundfish Surveys, December 1981, 56 pp.
- No. 3 – Miscellaneous papers (8), April 1982, 82 pp.
- No. 4 – Special Session papers (12), on Remote-Sensing Applications to Fishery Science, September 1982, 98 pp.
- No. 5 – Symposium papers (12), on Environmental Conditions in 1970–79, December 1982, 114 pages
- No. 6 – Miscellaneous papers (8), December 1983, 104 pp.
- No. 7 – Miscellaneous papers (9), August 1984, 98 pp.
- No. 8 – Miscellaneous papers (12), April 1985, 96 pp.
- No. 9 – Special Session papers on Squids (17), November 1985, 180 pp.
- No. 10 – Miscellaneous papers (9), August 1986, 112 pp.
- No. 11 – Miscellaneous papers (11), March 1987, 127 pp.
- No. 12 – Miscellaneous papers (8), March 1988, 90 pp.
- No. 13 – Miscellaneous papers (5), November 1989, 82 pages
- No. 14 – Miscellaneous papers (6), May 1990, 74 pp.
- No. 15 – Miscellaneous papers (7), May 1991, 68 pp.
- No. 16 – Special Session papers (22), on Management Under Uncertainties 5–7 September 1990, November 1991, 190 pp.
- No. 17 – Workbook on Introduction to Sequential Population Analysis, February 1993, 98 pp.
- No. 18 – Symposium papers (18), on Changes in Abundance and Biology of Cod Stocks and Their Possible Causes, July 1993, 110 pp.

NAFO Scientific Council Studies (Continued)

- No. 19 – Miscellaneous papers (8), October 1993, 98 pp.
- No. 20 – Miscellaneous papers (7), February 1994, 114 pp.
- No. 21 – Collections of Papers Related to Northern Cod and Seals in NAFO Divisions 2J and 3KL (10), December 1994, 165 pp.
- No. 22 – Miscellaneous papers (6), May 1995, 95 pp.
- No. 23 – Miscellaneous papers (5), September 1995, 95 pp.
- No. 24 – Symposium papers (12), on Impact of Anomalous Oceanographic Conditions at the Beginning of the 1990s in the Northwest Atlantic on the Distribution and Behaviour of Marine Life, September 1994, 155 pp.

NAFO Scientific Council Reports

This publication contains reports of Scientific Council Meetings held throughout the year.

- 1980 – Reports of seven meetings in 1979 and 1980, Published December 1980, 190 pp.
- 1981 – Reports of four meetings in 1981, Published December 1981, 148 pp.
- 1982 – Reports of two meetings in 1982, Published December 1982, 110 pp.
- 1983 – Reports of three meetings in 1983, Published December 1983, 152 pp.
- 1984 – Reports of three meetings in 1984, Published December 1984, 126 pp.
- 1985 – Reports of three meetings in 1985, Published December 1985, 146 pp.
- 1986 – Reports of three meetings in 1986, Published December 1986, 156 pp.
- 1987 – Reports of three meetings in 1987, Published December 1987, 138 pp.
- 1988 – Reports of two meetings in 1988, Published December 1988, 150 pp.
- 1989 – Reports of two meetings in 1989, Published December 1989, 180 pp.
- 1990 – Reports of two meetings in 1990, Published December 1990, 188 pp.
- 1991 – Reports of two meetings in 1991, Published December 1991, 164 pp.
- 1992 – Reports of four meetings in 1992, Published December 1992, 212 pp.
- 1993 – Reports of three meetings in 1993, Published January 1994, 234 pp.
- 1994 – Reports of four meetings in 1994, Published January 1995, 234 pp.
- 1995 – Reports of three meetings in 1995, Published January 1996, 244 pp.

NAFO Statistical Bulletin

This publication replaced ICNAF Statistical Bulletin which terminated with Vol. 28 (revised). The volume numbering continues the series.

- Vol. 29 – Fishery statistics for 1979, Originally published July 1981; revised edition published November 1984, 290 pp.
- Vol. 30 – Fishery statistics for 1980, Originally published August 1982; revised edition published October 1984, 280 pp.
- Vol. 31 – Fishery statistics for 1981, Originally published September 1983; revised edition published March 1985, 276 pp.
- Vol. 32 – Fishery statistics for 1982, Published December 1984, 284 pp.
- Vol. 33 – Fishery statistics for 1983, Published December 1985, 280 pp.
- Vol. 34 – Fishery statistics for 1984, Published December 1986, 304 pp.
- Vol. 35 – Fishery statistics for 1985, Published December 1987, 322 pp.
- Vol. 36 – Fishery statistics for 1986, Published October 1989, 304 pp.
- Vol. 37 – Fishery statistics for 1987, Published April 1990, 295 pp.
- Vol. 38 – Fishery statistics for 1988, Published February 1991, 307 pp.
- Vol. 39 – Fishery statistics for 1989, Published February 1993, 300 pp.
- Vol. 40 – Fishery statistics for 1990, Published February 1994, 309 pp.
- Vol. 41 – Fishery statistics for 1991, Published February 1995, 318 pp.
- Statistical Bulletin Supplementary Issue, 1960–90, (statistics) Published April 1995, 156 pp.
- Vol. 42 – Fishery statistics for 1992, Published October 1995, 310 pp.

NAFO List of Fishing Vessels

This triennial publication replaced ICNAF List of Fishing Vessels which terminated with the 1977 list in April 1980.

- 1980 – List for 1980, Published March 1983, 48 pp.
- 1983 – List for 1983, Published April 1985, 43 pp.
- 1986 – List for 1986, Published July 1988, 48 pp.
- 1989 – List for 1989, Published January 1992, 44 pp.

Inventory of Sampling Data

This publication replaced ICNAF Inventory of Sampling Data 1967–1978 which was completed in 1986.

- Inventory of Sampling Data 1979–1984, Published April 1989, 250 pp.
- Inventory of Sampling Data 1985–1989, Published March 1993, 265 pp.

NAFO Index of Meeting Documents

This publication contains lists of all documents along with a subject and author index of Scientific Council documents issued during a 5-year period.

- 1979–84 – Index of Meeting Documents, Published March 1985, 146 pp.
- 1985–89 – Index of Meeting Documents, Published December 1990, 116 pp.
- 1990–94 – Index of Meeting Documents, Published November 1995, 139 pp.

A price list for these publications may be obtained upon request. Orders for current and back issues and standing orders for future issues should be forwarded to the Executive Secretary, Northwest Atlantic Fisheries Organization, P. O. Box 638, Dartmouth, Nova Scotia, Canada B2Y 3Y9. Please note, prepayment is required on all orders.