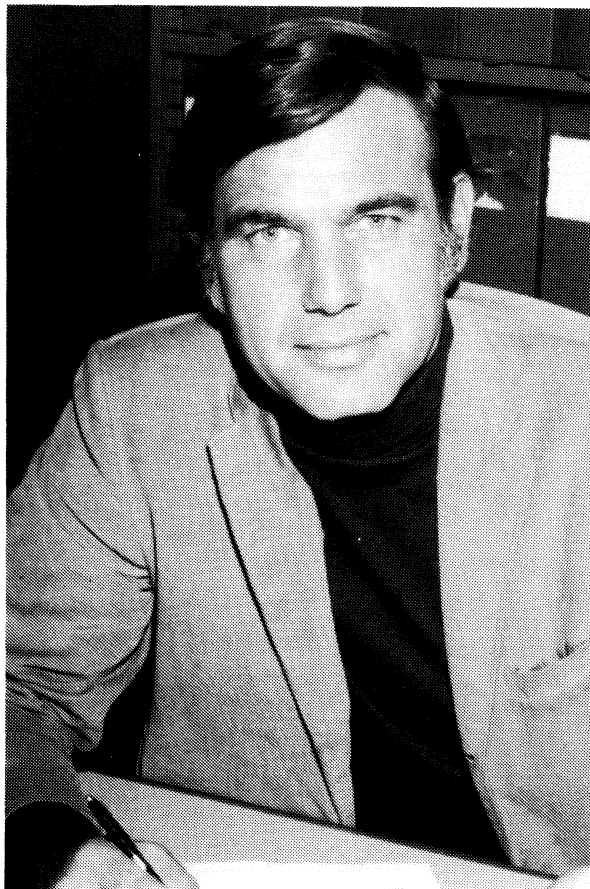


Richard C. Hennemuth

1930-1991



Richard (Dick) C. Hennemuth, fisheries scientist of international renown, died at his home in Falmouth, Massachusetts, USA on 15 February 1991, at age 60. Dick was born in North Dakota and received his undergraduate training at Gustavus Adolphus College in Minnesota. His interest in fisheries was established at Iowa State University where he received a Masters degree in 1954. He began his professional career as a fishery research biologist in March 1954 with the Inter-American Tropical Tuna Commission in California where he conducted studies on demographics of tunas in the Eastern Tropical Pacific Ocean. While working on tunas he continued graduate training in Oceanography at the Scripps Institute and in Mathematics at San Diego State College.

In 1961, he took a position as Fishery Research Biologist with the U.S. Bureau of Commercial Fisheries and moved to the Woods Hole Laboratory where for the next decade he served as Chief of the Fishery Management Biology Investigation. In 1971 he became Deputy

Director of the Northeast Fisheries Center (NEFC), a consortium of Federal Fishery Laboratories in northeastern USA, with headquarters at the Woods Hole Laboratory. The new center was one of four regional fishery science centers in the USA under the newly formed National Marine Fisheries Service. He served as Deputy Director of NEFC from 1971 to 1976, and then as Assistant Director for Fishery Management from 1977 to 1984, including a period as Acting Director of NEFC from June 1982 to September 1983. In addition he also was Director of the Woods Hole Laboratory from 1977 to 1985. His last post was Chief of Research Planning and Coordination at NEFC until his retirement in 1988.

During his professional career as a fishery scientist spanning nearly 35 years Dick made major contributions in the field of conservation and management of fisheries, both as an individual investigator and as a director of fishery assessment research programs at the Woods Hole Laboratory and at NEFC.

Immediately upon his arrival in Woods Hole in 1961 he became heavily involved with the work of the International Commission for the Northwest Atlantic Fisheries (ICNAF), and this remained a principal focus for his work for the next 15 years. At that time distant water fleets were arriving in the Northwest Atlantic in rapidly increasing numbers and exploitation rates soon grew to unprecedented levels accompanied by large declines in many fish stocks. Fishery scientists in ICNAF member countries on both sides of the Atlantic were thrown into a marathon of expanded intensive research and an ever increasing agenda of international meetings, in an attempt to document the effects of fishing on the stocks and to help devise more effective management strategies for achieving maximum sustainable yields.

During 1961-77 he played a major role both as USA scientific advisor to ICNAF, and as a member of the Assessment Subcommittee of the ICNAF Standing Committee on Research and Statistics (STACRES) which he chaired from 1970 to 1972. He also served as Chairman of the Statistics Subcommittee in 1965. Concurrently he played a critical role in building a stronger fishery assessment program at the Woods Hole Laboratory and enhancing its capability with modern analytical and data processing methods; and he was a key player in the development of improved data bases throughout the ICNAF area. He contributed significantly to the development of standardized fishery-independent research vessel surveys which were

important in monitoring trends in abundance of both individual stocks and total finfish biomass in relation to fishing effort. He also contributed to development of the first estimates of the total sustainable yield in relation to total fishing effort off the northeast coast of the USA.

In addition to his work in ICNAF, Dick was a significant participant in other national and international programs on conservation and management of living marine resources; these include the Northeast Fishery Management Task Force, the *Global 2000 Report to the President* on the future of world fisheries, USA member of Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS, SCAR/SCOR), and Chairman of the Fish Stock Assessment Working Group of the Commission for the Conservation of Antarctic Living Marine Resources. He also helped found the International Center for Statistical Ecology and Environmental Statistics at Pennsylvania State University and Poona, India. For these and other contributions he was the recipient of numerous awards including a Gold Metal from the U.S. Department of Commerce (its highest award) and the Distinguished Statistical Ecologist Award from the International Association for Statistical Ecology.

Concurrent with his heavy schedule as a research director and science advisor Dick completed studies toward a Doctorate in statistics at Harvard and authored a number of important papers on the ecology, assessment and management of fisheries. Among the most significant were his contributions toward clarifying the functional characteristics of fishery management concepts and goals including maximum and sustainable yields, optimum yields and benefits, and in helping devise management strategies such as quotas and effort limitation for achieving these goals. He was among the most dedicated and talented in his field and he will be sorely missed by his many friends and colleagues around the world for his personal friendship as well as his professionalism.

He is survived by his widow Ardys, five children and 12 grandchildren.

M. D. Grosslein,
NEFSC, Woods Hole Laboratory,
Massachusetts, USA.

NOTICE

State-of-the-Art in Fish Stock Assessment: a Tutorial/Workshop on Calibration Methods and Their Practical Use

The Scientific Council at its September 1990 meeting chose this theme for the Special Session which is scheduled for September 1992.

The Special Session will be held from 8 to 10 September 1992 at NAFO Headquarters, 192 Wyse Road, Dartmouth, Nova Scotia, Canada, during the week preceding the NAFO Annual Meeting.

The main areas of activities will be:

- Lectures on the various assessment methods and computer packages.
- Exercises using the computer packages with simulated datasets.
- Exercises on real data.

The Session will be designed to contain lectures and instructions on how to use available mathematical and computer tools on fish stock assessment from a fundamental level.

Tutorial material will be prepared specifically for this Session and circulated during the June 1992 Scientific Council Meeting.

In order to improve the possibility of success, the Scientific Council agreed it would be necessary to limit the number of participants.

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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, desig-

nated 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 (approximately \$ 650.00 US), 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 (NAFO)
P. O. Box 638, Dartmouth, Nova Scotia
Canada B2Y 3Y9

Fax No.: (902) 469-5729
Telex No.: 019-31475

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 × 28 cm (8.5 × 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 contribu-

tions 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 ("log₁₀" 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
Canada B2Y 3Y9

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 meeting 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:

Assistant Executive Secretary
Northwest Atlantic Fisheries Organization
P. O. Box 638
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Scientific Publications of the Northwest Atlantic Fisheries Organization

Journal of Northwest Atlantic Fishery Science

This publication began after the ICNAF Research Bulletin which terminated with No. 14 in September 1979. Each annual volume consists of one or more numbers.

- Vol. 1 — One number, 10 papers, 112 pages (Published December 1980)
- Vol. 2 — One number, 10 papers, 76 pages (Published October 1981)
- Vol. 3 — Two numbers, 17 papers, 180 pages (Published May and December 1982)
- Vol. 4 — One number, special issue on early stages of marine fishes, 424 pages (Published July 1983)
- Vol. 5 — Two numbers, 26 papers, 224 pages (Published January and November 1984)
- Vol. 6 — Two numbers, 17 papers, 179 pages (Published June and December 1985)
- Vol. 7 — Two numbers, 18 papers, 177 pages (Published December 1986 and December 1987)
- Vol. 8 — One number, 7 papers, 88 pages (Published December 1988)
- Vol. 9 — Two numbers, 13 papers, 159 pages (Published September and December 1989)
- Vol. 10 — One number, special issue of an invited review paper, 57 pages (Published December 1990)
- Vol. 11 — One number, 7 papers, 80 pages (Published February 1991)

NAFO Scientific Council Studies

This publication replaced ICNAF Special Publication, which terminated with Number 11 (revised) in August 1980, and ICNAF Selected Papers, which terminated with Number 6 in January 1980. One or more numbers are published annually.

- No. 1 — Miscellaneous papers (11), 101 pages (Published March 1981)
- No. 2 — Manual on groundfish surveys, 56 pages (Published December 1981)
- No. 3 — Miscellaneous papers (8), 82 pages (Published April 1982)
- No. 4 — Papers on remote-sensing applications to fishery science (12), 98 pages (Published September 1982)
- No. 5 — Papers on environmental conditions in 1970-79 (12), 114 pages (Published December 1982)
- No. 6 — Miscellaneous papers (8), 104 pages (Published December 1983)
- No. 7 — Miscellaneous papers (9), 98 pages (Published August 1984)
- No. 8 — Miscellaneous papers (12), 96 pages (Published April 1985)
- No. 9 — Papers on squid (17), 180 pages (Published November 1985)
- No. 10 — Miscellaneous papers (9), 112 pages (Published August 1986)
- No. 11 — Miscellaneous papers (11), 127 pages (Published March 1987)
- No. 12 — Miscellaneous papers (8), 90 pages (Published March 1988)
- No. 13 — Miscellaneous papers (5), 82 pages (Published November 1989)
- No. 14 — Miscellaneous papers (6), 74 pages (Published May 1990)
- No. 15 — Miscellaneous papers (7), 68 pages (Published May 1991)
- No. 16 — Papers (22) on Management Under Uncertainties, 190 pages (Published November 1991)

NAFO Scientific Council Reports

This publication (issued annually) replaced ICNAF Redbook which terminated with the issue in December 1979.

- 1980 — Reports of seven meetings in 1979 and 1980, 190 pages (Published December 1980)
- 1981 — Reports of four meetings in 1981, 148 pages (Published December 1981)
- 1982 — Reports of two meetings in 1982, 110 pages (Published December 1982)

- 1983 — Reports of three meetings in 1983, 152 pages (Published December 1983)
- 1984 — Reports of three meetings in 1984, 126 pages (Published December 1984)
- 1985 — Reports of three meetings in 1985, 146 pages (Published in December 1985)
- 1986 — Reports of three meetings in 1986, 156 pages (Published in December 1986)
- 1987 — Reports of three meetings in 1987, 138 pages (Published in December 1987)
- 1988 — Reports of two meetings in 1988, 150 pages (Published in December 1988)
- 1989 — Reports of two meetings in 1989, 180 pages (Published in December 1989)
- 1990 — Reports of two meetings in 1990, 188 pages (Published in December 1990)
- 1991 — Reports of two meetings in 1991, 164 pages (Published in December 1991)

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, 290 pages (Originally published July 1981; revised edition published November 1984)
- Vol. 30 — Fishery statistics for 1980, 280 pages (Originally published August 1982; revised edition published October 1984)
- Vol. 31 — Fishery statistics for 1981, 276 pages (Originally published September 1983; revised edition published March 1985)
- Vol. 32 — Fishery statistics for 1982, 284 pages (Published December 1984)
- Vol. 33 — Fishery statistics for 1983, 280 pages (Published December 1985)
- Vol. 34 — Fishery statistics for 1984, 304 pages (Published December 1986)
- Vol. 35 — Fishery statistics for 1985, 322 pages (Published December 1987)
- Vol. 36 — Fishery statistics for 1986, 304 pages (Published October 1989)
- Vol. 37 — Fishery statistics for 1987, 295 pages (Published April 1990)
- Vol. 38 — Fishery statistics for 1988, 307 pages (Published February 1991)

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, 48 pages (Published March 1983)
- 1983 — List for 1983, 43 pages (Published April 1985)
- 1986 — List for 1986, 48 pages (Published July 1988)

Inventory of Sampling Data

The first publication under the aegis of NAFO was published in April 1989. The "Inventory of Sampling Data 1979-84" (250 pages) was prepared in the same format as the previous ICNAF inventory.

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 — 146 pages (Published March 1985)
- 1985-89 — 116 pages (Published December 1990)

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.

