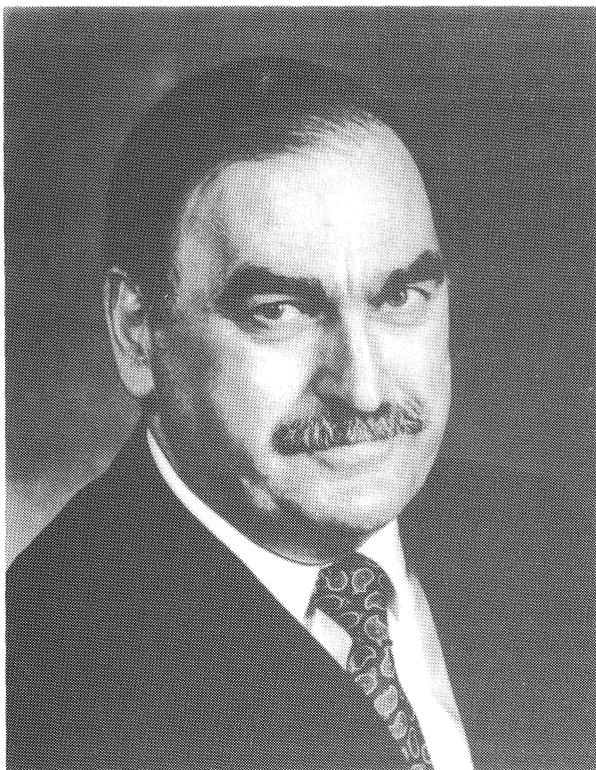


Richard Wells

1 August 1937 to 19 December 1989



Richard (Dick) Wells, who was a well known expert on gadoid biology and fisheries management science, died after a brief illness at St. John's, Newfoundland, Canada on 19 December 1989. Dick was born in Corner Brook, Newfoundland and received his early education in that city. He graduated from Memorial University of Newfoundland in 1961 with a BA (Hons.) degree, after which he taught high school for a short period. After working as a student assistant at the Biological Station of the Fisheries Research Board of Canada in St. John's during the summers of 1959 and 1961, Dick joined the scientific staff of the Biological Station in 1962. He graduated from Memorial University of Newfoundland with the degree of M.Sc. in Biology in 1968.

During his almost three decades as a fisheries scientist, Dick worked primarily on the biology of cod and haddock in the Newfoundland-Labrador area. In the early years of his career he conducted research on offshore cod in general and Labrador and northern Newfoundland cod in particular. In 1965 he was appointed scientist-in-charge of research on cod and haddock on the southern Grand Bank and cod on the Flemish Cap. In 1968 he was appointed scientist-in-

charge of research on cod in the northern Newfoundland and Labrador areas and the Gulf of St. Lawrence. He held this position until his appointment in 1974 as Section Head of the newly formed Gadoid Section of the Groundfish Division, a position he held until his death.

Throughout his career, Dick played a key role in the process of providing scientific advice to both national and international fisheries managers. He became involved in the International Commission for the Northwest Atlantic Fisheries (ICNAF) at about the time the first TAC's were set in 1973 and he played an important part in the advice leading to these early TAC's. When the Canadian Atlantic Fisheries Scientific Advisory Committee (CAFSAC) was formed in 1977 as a result of extension of Canada's jurisdiction to 200 miles, Dick was the first Chairman of the Groundfish Subcommittee of CAFSAC (1977-79). He subsequently served as Chairman of CAFSAC during 1985-86. In addition during 1982-83 he served as the Chairman of the Scientific Council of the Northwest Atlantic Fisheries Organization (NAFO), the organization that replaced ICNAF in 1979. In all of these capacities Dick was instrumental in shaping the manner in which scientific advice on the management of the living marine resources in the Northwest Atlantic was provided to both Canada and NAFO.

Locally, Dick made a significant contribution to our understanding of the biology of cod and the response of this species of fishing pressures and environmental changes in the Newfoundland/Labrador area. His knowledge of the science of cod and his grasp of fisheries management problems in general placed him in great demand by government and fishing industry officials alike and he attended countless meetings, seminars, briefings, etc. where his well-reasoned views were highly valued. In fact, the events in the Newfoundland fishery in recent years placed such demands on his time that his own personal research tended to suffer. In 1988, he and some of his colleagues in the Gadoid Section, who were deeply involved in the assessment and provision of scientific advice for cod, were awarded the Departmental Merit Award by the Minister of Fisheries and Oceans for their outstanding contribution in this regard.

In the midst of all these demands Dick maintained the sense of humour for which he became noted and was expert at diffusing any tense situation with this wry sense of humour. He had a deep personal commitment

to scientific excellence and honesty in research which is too often taken for granted. With the death of Dick Wells, the Government of Canada has lost a dedicated employee, the fishing industry has lost a very knowledgeable scientist, who was always cognisant of the fact that it is fishermen who are affected most when management decisions are taken, and the scientific community has lost a most valued colleague. Those of us who knew him best have lost a caring friend whose

presence will long be missed in the corridors of the Northwest Atlantic Fisheries Centre in St. John's.

A. T. Pinhorn, Science Branch
Northwest Atlantic Fisheries Centre
St. John's, Newfoundland, Canada

Wilfred Templeman

1908–1990



Dr W. Templeman, an internationally renowned fisheries scientist, died suddenly at St. John's, Newfoundland, Canada on 5 April 1990. Dr Templeman was born at Bonavista, Newfoundland and received his early education in that town. He completed senior matriculation at the Methodist College in St. John's, Newfoundland in 1924, after which he taught in Newfoundland public schools until 1927. He then attended Memorial University College at St. John's in 1927–28 and Dalhousie University from 1928 to 1930, from which he graduated with a B.Sc. degree (with Great Distinction) in 1930. He was subsequently awarded a Fisheries Research Board scholarship and attended the University of Toronto during 1931–33, from which he received a M.A. in 1931 and a Ph.D. in 1933 under Dr A. G. Huntsman. From 1933 to 1936 he was a lecturer in the Department of Biology at McGill University. He joined the staff of Memorial University in 1936 as associate professor and Head, Department of Biology and was made a full professor in 1943. In 1944 he became Director of the Newfoundland Government Laboratory, which became the St. John's Biological Station of the Fisheries Research Board of Canada, when Newfoundland joined Canada in 1949. He continued as Director

until 1972. During this time he was also visiting research professor at Memorial University from 1957 to 1972 and after his retirement as Director of the St. John's Biological Station in 1972, he was J. L. Paton Professor of Marine Biology and Fisheries at Memorial University during 1972–82. After this, he continued his research career as a researcher at the Northwest Atlantic Fisheries Centre, St. John's, until his death.

During his career in fisheries, which spanned over half a century, Dr Templeman was a researcher, a scientific leader and an educator. As a researcher, he published over 250 scientific papers which covered a wide variety of topics from vitamin A in liver oils to climatic trends, from sea-fleas to birds and from seals to shellfish and fish. His early work on lobsters in the 1930's led to changes in lobster regulations and had a considerable influence on later lobster research. His later research included different species of rare fishes, dogfish, skates, capelin, salmon and groundfish but it is for his research on groundfish that Dr Templeman is best known. Much of his early groundfish research concentrated on the provision of advice to fishermen on locations and movements of major commercial species and the most appropriate fishing technologies. Following this exploratory phase, his research shifted to aspects of fish in relation to their environment and an understanding of stock definition and relationships. With increased exploitation and overexploitation by the international fishery during the 1960's, his research in population dynamics (age, growth, recruitment) was intensified to better understand how natural factors and exploitation by man were affecting stock size and abundance. Much of this research culminated in the publication of a bulletin in 1966 entitled, "Marine Resources of Newfoundland". The body of knowledge accumulated by Dr Templeman and researchers under his direction was invaluable in providing scientific advice in the very early days of regulation of groundfish by total allowable catches.

As a scientific leader, Dr Templeman made major contributions both nationally and internationally. On the national scene, he was highly regarded in the fishing industry and among national fisheries managers and for years the fishing industry looked to Dr Templeman as a key spokesperson representing industry problems to government. As Director of the Biological Station for 28 years, he oversaw the transfer of fisheries research responsibilities from Britain's oldest colony to Canada's youngest province in 1949 and subsequently was responsible for the conduct of research, the results of which even to this day constitute much of the knowledge base of our understanding of marine resources in

the waters around Newfoundland. During this period, a considerable part of his time was spent in attempting to guide Memorial University's policies and interests closer to the sea and to better tailor the system to provide scientists well trained for fisheries research. On the international scene, Dr Templeman was one of the founding fathers of the International Commission for the Northwest Atlantic Fisheries (ICNAF), being one of Newfoundland's representatives at the founding convention in 1949 and he played a leading role in that organization as one of Canada's senior scientists. He chaired the Standing Committee on Research and Statistics in 1964-67 and later the Scientific Advisors to Panel 2. In addition to these he chaired numerous smaller committees and working groups of ICNAF and participated in many meetings and symposia around the world, always contributing papers where possible.

As an educator he developed graduate level courses at the Memorial University campus in St. John's and sought out promising new researchers with scholarship awards, student employment and other programs. There is little doubt that Dr Templeman had a tremendous impact on the development of the present generation of Newfoundland scientists at the Northwest Atlantic Fisheries Centre in St. John's.

In recognition of his many contributions in these fields, Dr Templeman was awarded the Order of the

British Empire (OBE) in 1948, was named a Fellow of the Royal Society of Canada (FRSC) in 1950 and received the Canadian government's Public Service Merit Award in 1972 for performance at an unusually high level over an extended period of time. In 1976 an Honorary D.Sc. was conferred on him by Memorial University of Newfoundland and in 1982 a modern Canadian government 50-metre research trawler was named in his honour.

Dr Templeman was one of the world's most outstanding marine biologists and fisheries research scientists. He was also one of the last real naturalists who sought to study and understand all the different facets of nature. Few people give as much to their chosen field of interest and maintain as much interest and enthusiasm for their work as he did. The world has lost a great scientist, leader and educator in the death of Dr Templeman and those of us who were fortunate enough to have come under his influence have lost a source of inspiration which will be sorely missed in today's rapidly changing world of science.

A. T. Pinhorn, Science Branch
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St. John's, Newfoundland, Canada

NOTICE

Management Under Uncertainties Related to Biology and Assessments, with Case Studies on Some North Atlantic Fisheries

Special Session of the Scientific Council of NAFO, Lord Nelson Hotel,
Halifax, Nova Scotia, Canada, 5-7 September 1990

General Theme

The intention of the Special Session is to explore the implications for management of the uncertainties in both the dynamics of fish stocks, and those in the assessment of their past, present and future states. It is hoped that it will be possible to discuss some case studies from the North Atlantic, but theoretical contributions are also welcome. Some suggestions for special topics are given below, but these are not exhaustive. Contributions from management work of living marine resources other than fish stocks (e.g. whales) would offer opportunity for wider discussion.

Special Topics

1. Sources of uncertainty: their magnitude and effects
 - a) biological uncertainties in stock definition and dynamics
 - b) assessment uncertainties: errors in data and the interpretation thereof
2. The interaction of biological uncertainties with management policies
 - a) sensitivity of management policies to errors (e.g. exploratory management, adaptive updating *versus* certainty-equivalent procedures, status quo F, fixed target F, fixed target biomass)
 - b) given a certain policy, when will uncertainty block the possibility of prudent management?
 - c) Can error-tolerant strategies help?
3. Communication of advice
 - a) admit uncertainties without undermining the advice?
 - b) how and when are multiple management options appropriate?
 - c) guidance for managers between options?
 - d) is there a way to give advice with error bounds?

Deadlines

Authors are requested to send titles and brief descriptions of their potential contributions to the Secretariat by **30 May 1990**. Papers will be selected on the basis of their relevance to the topics indicated above. Authors are requested that completed manuscripts (typescript or good quality photocopy) be forwarded to reach the NAFO Secretariat by **30 August 1990** for mimeographing. Authors who cannot meet this deadline are requested to bring 50 copies of their manuscripts for distribution at the beginning of the Session.

Publication of Papers

Publication in the *Journal of Northwest Atlantic Fishery Science* or *NAFO Scientific Council Studies* will depend on the nature and quality of the paper.

Addresses

Further information may be obtained from the Convener (J. Shepherd) or the NAFO Secretariat.

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NOTICE

Atlantic Cod: The Understanding on Physiology, Dynamics, Ecology and Environmental Relationships

This theme was chosen by the Scientific Council of NAFO for a 3-day session which is tentatively scheduled for September 1991.

Details of organizational arrangements, including confirmation of time and place, outline of topics to be covered, and deadlines for the submission of abstracts and completed manuscripts will be finalized during the September 1990 Meeting of the Scientific Council.

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) has 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
Dartmouth, Nova Scotia
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NAFO Scientific Council Studies

Previous Issues

- No. 1. Miscellaneous Selected Papers (101 pages, published March 1981)
- No. 2. Manual on Groundfish Surveys in the Northwest Atlantic. W. G. Doubleday, Editor (55 pages, published December 1981)
- No. 3. Miscellaneous Selected Papers (82 pages, published April 1982)
- No. 4. Special Session on Remote Sensing, September 1981 (98 pages, published September 1982)
- No. 5. Symposium on Environmental Conditions in the Northwest Atlantic During 1970-79, September 1981 (113 pages, published December 1982)
- No. 6. Miscellaneous Selected Papers (103 pages, published December 1983)
- No. 7. Miscellaneous Selected Papers (97 pages, published August 1984)
- No. 8. Miscellaneous Selected Papers (95 pages, published April 1985)
- No. 9. Special Session on Squids, September 1984 (179 pages, published November 1985)
- No. 10. Miscellaneous Selected Papers (112 pages, published August 1986)
- No. 11. Miscellaneous Selected Papers (128 pages, published March 1987)
- No. 12. Miscellaneous Selected Papers (90 pages, published March 1988)
- No. 13. Miscellaneous Selected Papers (82 pages, published November 1989)

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