

NORTHWEST ATLANTIC FISHERIES ORGANIZATION



Scientific Council Studies Number 28

Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results

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Foreword

In accordance with its mandate to disseminate information on fisheries research to the scientific community, the Science Council of NAFO publishes the *Journal of Northwest Atlantic Fishery Science*, which contains peer-reviewed primary papers and notes on original research, and *NAFO Scientific Council Studies*, which contains review papers of topical interest and importance, and sometimes includes contributions to special meetings and symposia. Each year since 1981, the Scientific Council has held a Special Session on a topic of particular interest, and many of the documented contributions to those sessions have been published in NAFO publications or in other fishery-oriented periodicals.

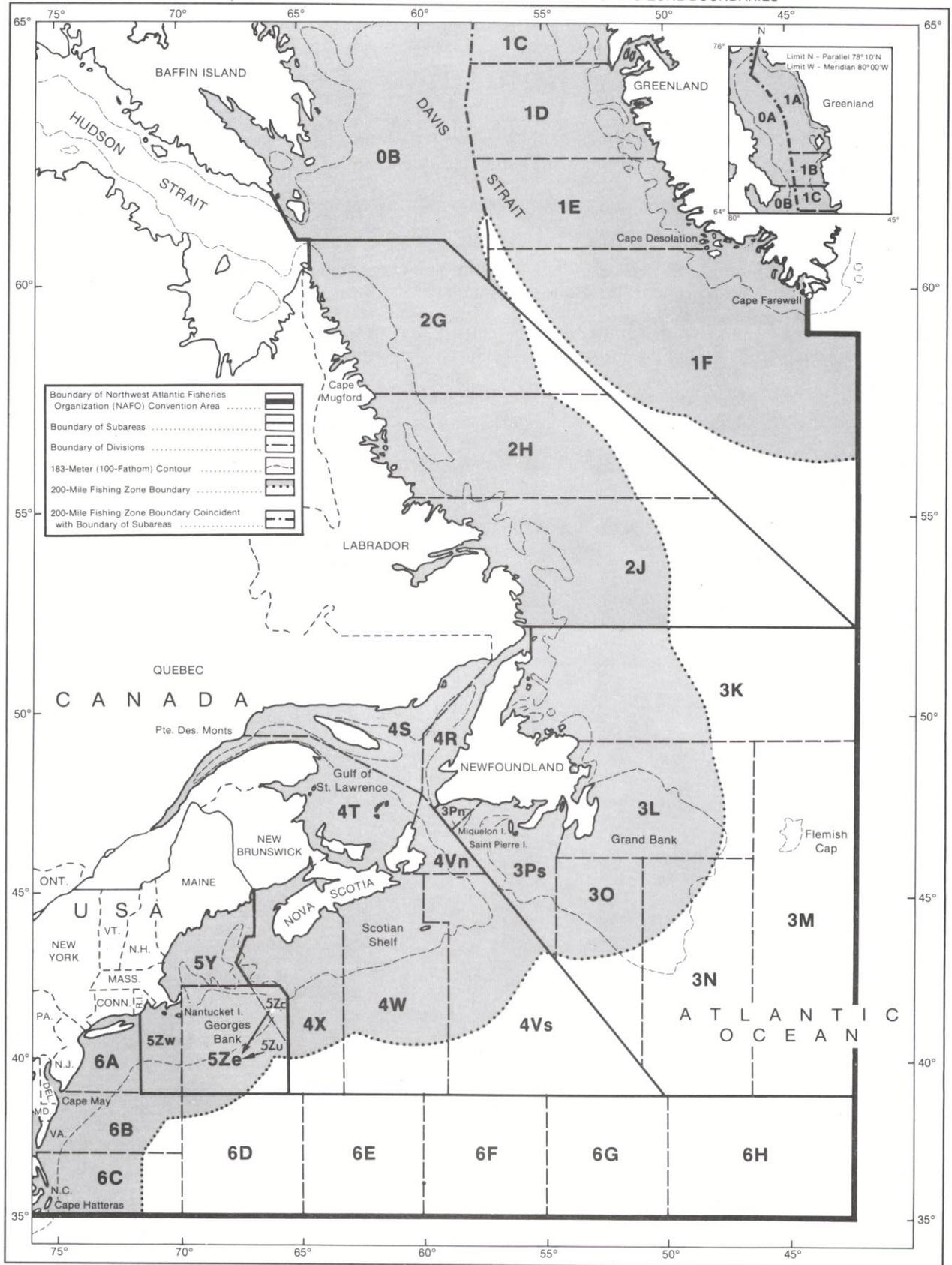
During 4–6 September 1996, the Scientific Council held a Special Session as a Workshop titled 'Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results', with H. Lassen (EU–Denmark) as convener, in conjunction with the 18th Annual Meeting of NAFO, at the Shuvalov Palace in St. Petersburg, Russia.

For use during this Workshop, a Workbook was prepared titled 'Assessment of Groundfish Stocks Based on Bottom Trawl Survey Results' containing the preliminary material prepared by the keynote and invited speakers to introduce the subject matter and to assist the participants through the hands-on sessions on methodology. At its meeting of 7–13 September 1996, the Scientific Council agreed that this special issue of the *NAFO Scientific Council Studies* should be published containing the revised contributions by the authors.

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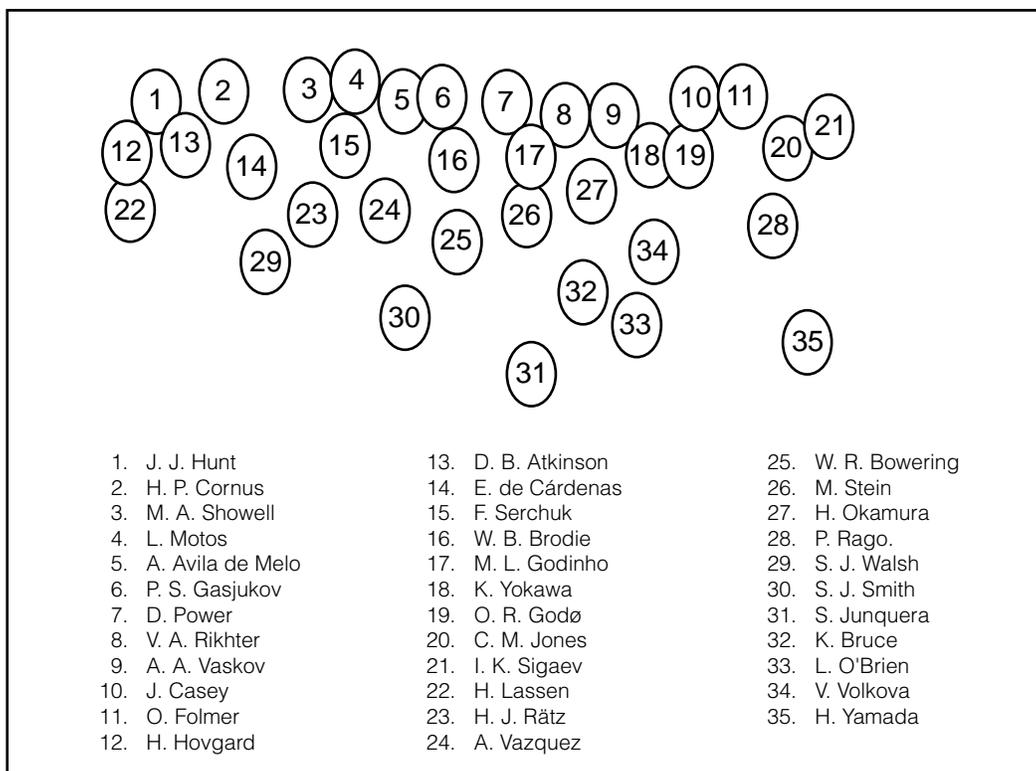
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MAP ILLUSTRATING NAFO'S CONVENTION AREA AND 200-MILE FISHING ZONE BOUNDARIES



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Participants of Scientific Council Meeting, 4-6 September 1996

Program

Wednesday, 4 September 1996

- 09:00–10:00 Registration
- 10:00–10:30 Welcome by the Scientific Council Chairman W. R. Bowering.
Introduction and objective of the Workshop by Convener, Hans Lassen.
- 10:30–11:30 **Keynote Speaker:** S. J. Walsh, Department of Fisheries and Oceans, Northwest Atlantic Fisheries Centre, St. John's, Newfoundland, Canada AIC 5X1
- Estimating efficiency of sampling trawl to derive survey abundance indices: A review of problems and progress. (11:30–11:45 Coffee)
- 11:45–12:45 **Keynote Speaker:** S. Smith, Department of Fisheries and Oceans, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada B2Y 4A2
- Overview of statistical techniques available for the analysis of data from bottom trawl surveys. The difference between the survey design and the model of fish distribution and availability. Deriving estimates of absolute biomass and abundance from bottom trawl surveys. (12:45–14:30 Lunch)
- 14:30–18:00 **Hands-on Session**, S. Smith, Chairman: Application of some statistical techniques. This session will include a brief presentation of a survey from which the data have been extracted. (16:00–16:15 Coffee)

Thursday, 5 September 1996

- 09:00–12:30 **Hands-on Session**, S. Smith and H. J. Rätz, Chairmen: Continuation of application of some statistical techniques. This session will include Accuracy and Precision, and the effect of design. The session will be concluded by a general discussion. (11:00–11:15 Coffee) (12:30–14:00 Lunch)
- 14:00–15:00 **Keynote Speaker:** M. Stein, Bundesforschungsanstalt für Fischerei, Hamburg, Republic of Germany
- Overview of the environmental aspects of the analysis of fish stocks using bottom trawl surveys. Estimation of geographical distribution of fish and its relation to environmental parameters observed during the surveys.
- Invited Lecturer:** H. J. Rätz, Bundesforschungsanstalt für Fischerei, Hamburg, Republic of Germany
- 15:00–18:00 **Hands-on Session**, H. J. Rätz and M. Stein, Chairmen: Modelling with environmental data. This session will include spacial analysis. Concluded by a general discussion. (16:00–16:15 Coffee)
- H. Lassen: Introduction to the session (Friday) on case studies brought to the Workshop by the participants.

Friday, 6 September 1996

Invited Lecturers: L. O'Brien and P. Rago, NEFC, Woods Hole, MA, USA

- 09:00–12:30 **Hands-on Session**, L. O'Brien and P. Rago: Introduction to the use of Generalized Additive Models for estimating relative abundance (stratified mean number-per-tow) accounting for environmental conditions of temperature and depth. Application of the model using S-Plus and-on session. This session will be concluded by a general discussion. (11:00–11:15 Coffee) (12:30–14:00 Lunch)
- 14:00–15:30 **Hands-on Session**, Instructors – H. Lassen, S. Smith, H. J. Rätz, L. O'Brien, P. Rago: Case studies brought to the Workshop by the participants. (15:30–15:45 Coffee)
- 15:45–17:00 Discussion on "What is the state of the art of assessing a demersal fish stock based on bottom trawl data only", and identify research requirements.
- 17:00–17:30 Conclusion and closure of the Workshop.