Journal of Northwest Atlantic Fishery Science



Volume 30

Northwest Atlantic Fisheries Organization Dartmouth, Canada

The presentation of material in this publication does not imply the expression of any opinion on the part of the Secretariat of the Northwest Atlantic Fisheries Organization (NAFO) concerning the legal national or international issues of any Contracting Party of NAFO or any country mentioned in this publication.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior permission of the NAFO Secretariat. Applications for such permission, with a statement of the purpose and extent of the reproduction, should be addressed to the Executive Secretary, Northwest Atlantic Fisheries Organization.

Northwest Atlantic Fisheries Organization 2 Morris Drive, P. O. Box 638 Dartmouth, Nova Scotia, Canada B2Y 3Y9

Tel.: (902) 468-5590 • Fax: (902) 468-5538 E-mail: info@nafo.ca • Website: www.nafo.ca

Journal of Northwest Atlantic Fishery Science



Volume 30

Printed and Distributed by:
Northwest Atlantic Fisheries Organization
P. O. Box 638, Dartmouth, Nova Scotia
Canada B2Y 3Y9

Journal of Northwest Atlantic Fishery Science

Scientific publications by ICNAF and NAFO have been in existence since ICNAF began in 1949 with the ICNAF Special Publication Series dealing with Proceedings of scientific symposia. The ICNAF Research Bulletin was started in 1964 to provide a means of publishing results of scientific research relevant to ICNAF. The ICNAF Research Bulletin was terminated in September 1979 after the issue of Number 14. The first volume of the NAFO Journal of Northwest Atlantic Fishery Science was published in December 1980, after NAFO came into force replacing ICNAF in 1979.

The Northwest Atlantic fisheries have a rich history, and a great deal of research has been sponsored and encouraged by NAFO, and its predecessor ICNAF, and has been a leader in international organizations in the application of science to fishery management and in the regulation of fisheries. In accordance with its mandate to disseminate information on fisheries research to the scientific community, the Scientific Council of NAFO publishes the *Journal of Northwest Atlantic Fishery Science*, which contains peer-reviewed primary papers, and *NAFO Scientific Council Studies*, which contains unrefereed papers of topical interest and importance to the Scientific Council. Lists of these and other NAFO publications are given on the back of this issue.

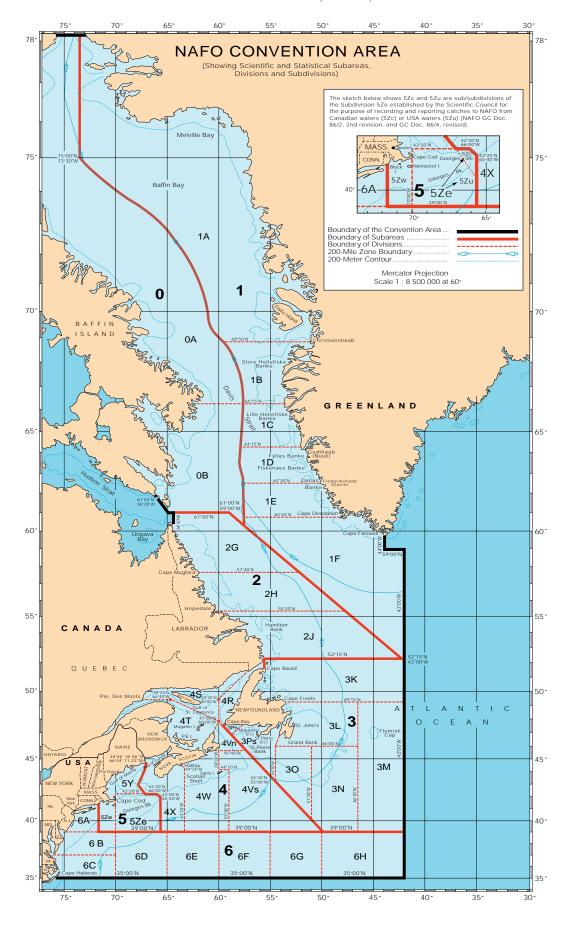
Editorial Policy

The Journal provides an international forum for the primary publication of original research papers, with emphasis on environmental, biological, ecological and fishery aspects of the living marine resources and ecosystems. While the Journal is intended to be regional in scope, papers of general applicability, and methodological and review papers, irrespective of region, are considered. Space is available for notes and letters to the editor to facilitate scientific discussion of published papers. Both practical and theoretical papers are eligible. All papers are peer-reviewed to determine their suitability for primary publication. Associate Editors arrange for the peer-reviews and ensure that the papers accepted for publication meet the high standards required for the Journal. Manuscripts approved for publication are accepted with the understanding that they are not copyrighted, published or submitted elsewhere except in abstract form. There are no page charges.

Editorial Board

Associate Editors:

- D. B. Atkinson, Department of Fisheries and Oceans, St. John's, Newfoundland, Canada (Vertebrate Fisheries Biology)
- K. F. Drinkwater, Department of Fisheries and Oceans, Dartmouth, Nova Scotia, Canada (*Physical and Fisheries Oceanography*)
- H.-J. Rätz, Institut für Seefischerei, Hamburg, Germany (Vertebrate Fisheries Biology)
- F. M. Serchuk, National Marine Fisheries Service, Woods Hole, Massachusetts, USA (Vertebrate Fisheries Biology)
- P. A. Shelton, Department of Fisheries and Oceans, St. John's, Newfoundland, Canada (Biomathematics)
- V. Siegel, Institut für Seefischerei, Hamburg, Germany (Invertebrate Fisheries Biology)
- T. Amaratunga, Northwest Atlantic Fisheries Organization Secretariat, Dartmouth, Nova Scotia, Canada (Technical Editor)



Foreword

In accordance with its mandate to disseminate information on fisheries research to the scientific community, the Scientific 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 to the current and future activities of the Scientific Council. Both publications have included proceedings of Special Sessions or Symposium of the Scientific Council as well as individually submitted papers. A series of invited papers for publication in the *NAFO Journal* was introduced by the Standing Committee on Publications of the Scientific Council in 1985. Some previous issues of the *Journal* were dedicated to such invited papers.

The present issue of the *Journal* is compiled with current scientific papers as reviewed and edited by some members of the Editorial Board.

2002

Tissa Amaratunga Technical Editor Northwest Atlantic Fisheries Organization Dartmouth, Nova Scotia Canada

Contents

Scientific Publications of NAFO	88
Notices	83
MacNEIL, M. A. and S. E. CAMPANA. Comparison of Whole and Sectioned Vertebrae for Determining the Age of Young Blue Shark (<i>Prionace glauca</i>)	77
WIELAND, K. and H. HOVGÅRD. Distribution and Drift of Atlantic Cod (<i>Gadus morhua</i>) Eggs and Larvae in Greenland Offshore Waters	61
PEDERSEN, S. A. and L. STORM. Northern Shrimp (<i>Pandalus borealis</i>) Recruitment in West Greenland Waters Part II. Lipid Classes and Fatty Acids in <i>Pandalus</i> Shrimp Larvae: Implications for Survival Expectations and Trophic Relationships	47
PEDERESEN, S. A., L. STORM, and C. S. SIMONSEN. Northern Shrimp (<i>Pandalus borealis</i>) Recruitment in West Greenland Waters Part I. Distribution of <i>Pandalus</i> Shrimp Larvae in Relation to Hydrography and Plankton	19
LINK, J. S., K. BOLLES, and C. G. MILLIKEN. The Feeding Ecology of Flatfish in the Northwest Atlantic	1