# NORTHWEST ATLANTIC FISHERIES ORGANIZATION

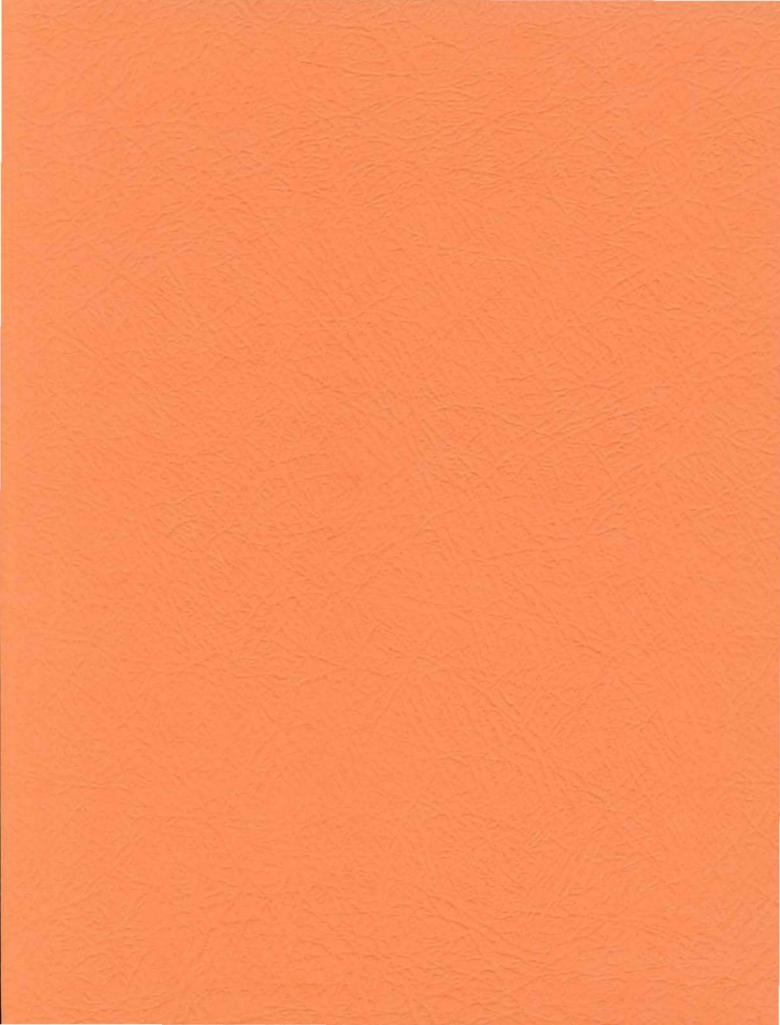


## Scientific Council Studies Number 2

Manual on Groundfish Surveys in the Northwest Atlantic

W. G. Doubleday, Editor

Dartmouth, Canada 1981



## NORTHWEST ATLANTIC FISHERIES ORGANIZATION



### Scientific Council Studies Number 2

Manual on Groundfish Surveys in the Northwest Atlantic

W. G. Doubleday, Editor

Dartmouth, Canada December 1981

#### **Foreword**

The first steps towards the development of a manual for bottom trawl surveys in the Northwest Atlantic were taken at a meeting of the Biological Surveys Subcommittee of the International Commission for the Northwest Atlantic Fisheries (ICNAF) Standing Committee on Research and Statistics in June 1975, in response to the growing importance of bottom trawl survey data in stock assessments. In recognition of the likely continuation of international cooperative research in the Northwest Atlantic following the extension of fisheries jurisdiction by coastal states, preparation of the manual was continued under the auspices of the Scientific Council of the Northwest Atlantic Fisheries Organization (NAFO). Scientists from several countries contributed material for the various chapters. Successive drafts have benefited from thorough review by members of the NAFO Standing Committee on Research Coordination. The editor expresses his thanks to the many contributors and critics for their active participation in the preparation of this manual.

November 1981

W. G. Doubleday Fisheries Research Branch Department of Fisheries and Oceans 240 Sparks Street Ottawa, Ontario Canada K1A 0E6

#### Contents

١.	Introduction		7
	A. B. C. D. E. F.	Need for Survey Information Scope of Manual History of Surveys in the Northwest Atlantic Major Objectives of a Coordinated Survey Program Existing Survey Manuals Need for a NAFO Survey Manual	7 7 7 13 13 14
11.	Survey Design and Statistical Considerations		14
	A. B. C. D. E.	Alternative Designs Factors Influencing Design Procedures Statistical Considerations Stratification Stratification Charts Station Selection Procedure	14 15 16 16 35 35
111.	General Requirements for Vessels and Gear		37
	A. B.	Vessels	37 38
IV.	Standardization of Survey Procedures		39
	А. В.	Definition of Gear Operations	39 40
V.	Data Collection		43
	A. B.	Trawl Station Methodology	43 44
VI.	Data Analysis		45
	A. B. C.	Need for Automatic Data-processing Facilities  Data-processing Procedures  Data Summaries	45 45 46
VII.	Validation of Survey Results		48
	А. В.	Comparison with Commercial Data	48 49
VIII.	Ref	erences	49
APP.	1.	Diagram of Sediment Sampler and its Attachment to the Forward Rigging of a Ground-fish Trawl	51
APP.	11.	Proposed International Standard for Fishing Net Drawings (Extracts from ISO 3169 Relevant to a Two-seam Trawl-net)	52
APP.	111.	List of Vessel and Gear Characteristics and Information Required or Desirable for Comparative Fishing Experiments (Extract from ICES, 1974)	55

