INTERNATIONAL SCIENTIFIC AFFAIRS

RELATIONSHIPS

OF THE

DEPARTMENT OF FISHERIES AND OCEANS

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INDEX

Acknowledgement

The author would like to express his sincere appreciation to Mr. M. Mercer, Director of the Northwest Atlantic Fisheries Centre, Mr. L. Coady and others on the staff, Dr. J. Stewart, Director of the Halifax Laboratory, Dr. J. Cooley, Acting Director of the Great Lakes Fisheries Research Laboratory, Dr. M. Waldichuck, West Vancouver Laboratory, Dr. M. Bewers, Bedford Institute of Oceanogrpahy, and Mrs. L. Tidmarsh, Dalhousie University, who provided an insight of their knowledge and experience in international marine science affairs through personal correspondence and supporting documentation.

A debt of gratitude is also owed to the staff of the Science Sector, Department of Fisheries and Oceans, for their time during numerous discussions while the preparation of this report was underway and to those in the Library who so very ably found much of the needed research material.

I am also indebted to Mr. D. Bradford for his assistance in reviewing the manuscript. Mrs. H. Morgan, Mrs. M. Maisoneuve, Mrs. S. Mousseau, Mrs. D. Burchat and Miss E. Robertson who typed, retyped and formatted this document are owed special thanks for their interest, perserverance and helpfulness despite the tight deadlines and pressure of other responsibilities.

N.J. Campbell

EXECUTIVE OVERVIEW

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This report is based on an examination of the Department of Fisheries and Oceans international scientific and technical affairs conducted in the fora of the U.N., its Specialized Agencies, other competent international organizations, the international scientific unions and commissions concerned with the management and conservation of fisheries resources.

Most of these institutions and their mechanisms are visited through discussions, personal communications and the knowledge of many scientists including the author who have been or are still involved in international scientific affairs. Numerous reports, documents and agreements have also been reviewed, a selection of which appears in the list of references.

The report is structured essentially in three parts; the first covers the U.N. and other competent international organizations, the second the multilateral and fisheries agreements and the third the bilaterals including Science and Technology.

The creation of the United Nations in 1945 provided a political institution in which virtually all countries of the world are now represented. It has grown and expanded to such an extent that it deals not simply with political issues but also with the interaction of nations on economic, technological, and scientific affairs not the least of which touch on some aspects of marine scientific affairs.

The Third Law of the Sea Conference set out new concepts and protocols of the rights of sovereign states to manage their ocean resources, to control the conduct of scientific research and to prevent marine pollution. Principles which have been put into practice by most States through declarations, legislation and agreements. The conduct of ocean science is now a regulated function and requires a close working relationship between researching and coastal states. It is thus not surprising to see specific references to marine scientific research in bilateral and multilateral fisheries agreements and strong emphasis being placed on these same sciences in more broadly based Science and Technological Agreements.

For Canada the Department of Fisheries and Oceans is uniquely positioned in that its international science activities embrace both the fisheries and ocean sciences. As a consequence the diversity of its sciences and related functions brings it in direct contact with a number of UN and international bodies as well as those established by Treaty.

The Department is well served in international oceanographic and biological investigations organized and developed within the framework of the U.N. and non-governmental organizations and by the International Hydrographic Organization acting in its capacity as the functional authority for all aspects of hydrographic surveying and charting in the world.

The Atlantic multi-regional and bilateral fisheries agreements, based on fisheries management requirements, serve the need to seek and provide scientific advice for Atlantic Canada fisheries issues, but the Pacific

multi-regional fisheries and sealing agreements fall far short of providing an international scientific forum for both fisheries and oceanographic sciences. The Great Lakes, however, is well served by two international organizations which cover fisheries and water resource scientific issues for Canada and the United States. The International Council for the Exploration of the Sea is the only international organization that brings together both fisheries and oceanographic research scientists in the framework of a single institution.

Bilateral fisheries agreements signed with western and eastern European bloc countries were aimed at gaining recognition of Canada's extension of fisheries jurisdiction out to 200 nautical miles, and these agreements have essentially fulfilled this purpose. Longstanding bilateral fishing agreements with the United States also reflect the new jurisdictions but ensure the continued close cooperation on scientific studies that have been maintained as a long tradition between the two countries.

The bilateral agreements on S&T cooperation are another vehicle of collaboration motivated from an economic perspective of enhancing trade and domestic industrial benefits but which have contributed substantially to technological advancements, visits, exchange of personnel and acquisition of knowledge. Most of the early scientific and technological (S&T) agreements signed were satisfied by basic science projects of common interest. The requirements of today's bilateral agreements, however, call for technology to meet industrial and joint venture objectives.

The opportunities for the Department to exploit the research findings and technology abroad are readily available through present agreements, but a concerted and well-directed effort will be required. A national policy and programmes to this effect would help ensure the continued excellence of fisheries and oceans science not only in the Department but in Canada as well.

UNITED NATIONS

UNITED NATIONS

Introduction

Of all the international bodies involved in marine affairs the United Nations and its Specialized Agencies are collectively the most dominant and influential. It is made up in a complex array of seemingly disparate infrastructures that in themselves provide a challenge for effective cooperation. It is the endless interplay by the Specialized Agencies and the UN that requires much patience and coaching to understand how the system works. Some of the more significant marine affairs linkages are identified to acquaint the reader with the UN system along with specific information on those bodies that play a significant role in marine scientific affairs.

The principal organs that have marine scientific affairs mandates are the Specialized Agencies, namely, the Food and Agriculture Organization (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and its Intergovernmental Oceanographic Commission (IOC), the World Meteorological Organization (WMO), and the International Maritime Organization. Regional UN organizations play an important part in the delivery of programmes, but the coordinating machinery for the UN as a whole is provided by the United Nations Economic and Social Council (ECOSOC) to which all Specialized Agencies report annually.

The Specialized Agencies of the UN are separate autonomous organizations which have their own membership, legislative executive bodies, secretariats and budgets. Formal agreements have been drawn up between the United Nations and the Specialized Agencies which allow for reciprocol representation at meetings, inclusion of agenda items, and exchange of information and documents. Furthermore each Specialized Agency has agreed to consider any recommendation made to it by the United Nations and to report to it on the actions taken to give effect on any such recommendation.

The activities of the Specialized Agencies are linked by the Administrative Committee on Coordination, a body under the chairmanship of the Secretary-General of the UN and composed of Executive Heads of the special programmes and organs of the United Nations. This body reviews the work of the United Nations in marine affairs in respect to mandates, activities and outputs. For these purposes it addresses current issues of concern to member States which among other things provides a cross-organizational glimpse of what is being done in the United Nations. The following issues are those identified by the Committee and each is briefly described.

i) The legal framework of marine affairs
ii) Policy making, planning and management
iii) Living marine resources
iv) Non-living marine resources
v) Use of ocean space
vi) Marine conservation
vii) Enhancement of knowledge about the Oceans
viii) Provision of Supporting Services

Involved in the above are seventeen major organizational units of the United Nations and eleven Specialized Agencies which handle about 460 distinct marine affairs activities with a total expenditure of about 371 million dollars.

The complexity of these programmes is such that little more than a passing reference can be made to provide an overview on the role that the United Nations plays in marine affairs.

Legal Framework of Marine Affairs

Several major offices of the United Nations have been and continue to be involved in the Law of Sea issues, namely the Office of the Special Representative for the Law of the Sea (UNCLS), Office of Legal Affairs, Political and Security Council Affairs (PSCA), and the Department of International Economic and Social Affairs (DIESA) which deals with the legislative framework for coastal area development. The Specialized Agencies also have supporting legal functions and a few examples are: the International Telecommunications Union (ITU) which determines the legal framework for the use of radio communications for maritime purposes, FAO, which through its Legal Office advises governments on the legal aspects of living marine resources and IMO which focuses on the implementation and application of conventions and other international regulations on maritime safety and marine pollution from ships.

Policy Making Planning and Management

Policy making is a major undertaking of the UN itself as well as the Specialized Agencies. DIESA, for example, analyses the main trends, policies and institutions in the use and management of the resources of the sea, marine and coastal technology and integrated coastal area developments. The United Nations Conference on Trade and Development (UNCTAD) handles the policies and development of the institutional capacity for both shipping and ports. The United Nations Environment Programme (UNEP), includes a strong management function in support of its Regional Seas Programme. The Food and Agricultural Organization (FAO) is the major Specialized Agency involved in policy issues covering fisheries policies, development of related institutions and technical cooperation.

Living Marine Resources

FAO is the major UN Agency involved in fisheries research, development and support functions. Its work encompasses the collection of fisheries data on a world wide scale, studies on fish production, utilization, marketing and marine resource management. Other organizations having fisheries related work include the International Labour Organization (ILO) which deals with the conditions of employment of fisherman and international labour standards, IMO which is involved in the safety of fishing vessels and UNESCO/IOC, whose ocean science research provides support information for FAO fisheries research. Within the United Nations itself UNCTAD promotes marketing of fish and fisheries products while UNEP supports studies on marine mammals in association with FAO.

Non Living Marine Resources

DIESA undertakes studies and research on sea-bed and offshore minerals and in particular on ocean thermal energy conversion. Nearly all the regional bodies in Asia, Africa, and Europe are involved in one way or another on offshore exploration, evaluation and development. The Intergovernmental Oceanographic Commission (IOC) has approved a programme on ocean science in relation to the non-living resources which is being co-sponsored by the UN Office of Ocean Economics and Technology (OETB). The Department of Technical Cooperation for Development (DTCD) promotes cooperation on the identification and development of coastal and marine mineral and energy resources.

These activities are perceived to have great potential significance with the establishment of the new legal regime of the oceans, and in particular for the development of the technology for exploitation of the mineral and energy resources of the oceans.

Use of Ocean Space

The shipping divisions in UNCTAD, and the regional commissions: the Economic Commission for Africa (ECA), the Economic Commission for Latin America (ECLA) and the Economic and Social Commission for Asia and the Pacific (ESCAP) deal with port development, shipping and the related infrastructural issues, while IMO deals mainly with the regulation and control of the use of ocean space, namely maritime safety, marine pollution and maritime regulations.

Marine Conservation

FAO, UNESCO and the United Nations are the principal bodies involved in marine conservation, however, UNEP plays a major part in the World Conservation Strategy and is supported by regional organizations such as the ECA and ESCAP in monitoring marine resources depletion and environmental management plans.

Control of Marine Pollution

The most heavily involved organizations in marine pollution are the United Nations, IMO, UNESCO/IOC and the International Atomic Energy Agency (IAEA). Programme activities of the United Nations are handled by UNEP, United Nations Industrial Development Organization (UNIDO), DIESA and the regional commissions. The UN, UNEP, FAO, UNESCO, WHO, WMO, IMO and IAEA together sponsor the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) but each of these organizations have their own programmes. The more important ones being addressed are the WHO programme on human health problems arising from unsafe waters whether of fresh or salt water origin, WMO with its atmospheric environmental pollution monitoring programme, and UNESCO/IOC through the Global Investigation of Pollution in the Marine Environment (GIPME).

Enhancement of Knowledge about the Oceans

The major organizations in this field are UNESCO/IOC, FAO, UNEP, IAEA, IMO, and WMO. The IOC conducts such major global ocean projects as the General Bathymetric Chart of the Oceans (GEBCO), GIPME, a program of Training, Education and Mutual Assistance in Marine Sciences, the Integrated Global Ocean Services System (IGOSS), and regional ocean science projects in seven geographic regions. UNESCO itself supports marine science research principally in coastal regions but it provides considerable assistance to the development of training institutions and infrastructures in support of national oceanographic and marine science institutes. The WMO World Climate Research Programme (WCRP) has a significant marine dimension, to which IOC makes a substantial contribution.

Provision of Supporting Services

Programme activities of the UN include work on hydrographic mapping and cartography by the Department of Technical Cooperation for Development (DTCD) and marine and coastal technology studies by DIESA. Of the Specialized Agencies, WMO provides major meteorological support services through its Marine Meteorology Programme, and the Tropical Cyclone Programme, ITU coordinates and sets the standards for marine telecommunications and radio-aids for navigation while FAO operates and manages the joint FAO/IOC Aquatic Sciences and Fisheries Information System (ASFIS) and its literature data base, Aquatic Sciences Fisheries and Abstracts (ASFA).

INTRODUCTION THE SPECIALIZED AGENCIES OF THE UNITED NATIONS

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Introduction

The Specialized Agencies of the UN namely UNESCO/IOC, FAO, IMO, WMO are the major bodies involved in marine science programmes. Other UN bodies such as the IAEA, UNEP, UNDP are engaged in providing special programmes, services and funding which together with the Specialized Agencies constitutes the active marine science component of the UN.

The principal body dedicated to marine sciences is the Intergovernmental Oceanographic Commission (IOC) of UNESCO which was created in 1960 to promote scientific investigation with a view to learning more about the nature and resources of the oceans through the concerted action by its member States. Besides its scientific and service functions which it provides on a global basis the Commission is the principal coordinating body within the United Nations system for marine science and related activities. In order to facilitate this function the UN, FAO, UNESCO, WMO and IMO formed an Inter-Secretariat Committee on Scientific Programmes Relating to Oceanography (ICSPRO) in 1969. The purpose of this committee is to contribute to the development of effective co-operation among the Organizations in the planning and implementation of an expanded programme of international co-operation in marine science. The establishment of ICSPRO was endorsed by the General Assembly of the UN in Resolution 2560 (XXIV) in 1969. The members of ICSPRO have assumed an obligation to support IOC through seconding staff to the IOC secretariat or through other means.

THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

The IOC was established within UNESCO in 1960 as an autonomous body with its own Assembly and Executive Council. The need for setting up such a body was recognized in 1950 when at the 8th session of the Unesco General Conference the Director-General was asked to consider the general question of coordination of research on scientific problems for member States. Oceanography and marine sciences were identified as two subject areas. The need was reinforced by the Scientific Committee on Oceanic Research (SCOR) which at the time was organizing and coordinating a cooperative effort to investigate the Indian Ocean, known as the International Indian Ocean Expedition (IIOE). UNESCO agreed to cosponsor the undertaking, but it soon became clear that for such a vast international undertaking it required the commitment of governments for the provision of research ships and facilities. In response to this situation the 10th General Conference of Unesco convened an intergovernmental meeting in Copenhagen which led to the establishment of the Commission by the Unesco General Conference in 1960. Since 1960 its membership has grown from 40 to 107 in 1986.

Purpose and Function

The Commission's prime purpose from the point of view of its member States is to promote scientific investigation and learn more about the nature and resources of the oceans, but within the UN system it is viewed as the main coordinating body in promoting and organizing marine sciences and related activities on global and regional scales.

To achieve its goals the Commission is served by three scientific advisory bodies: the Scientific Committee on Oceanic Research (SCOR) which provides advice on all aspects of ocean sciences, the Engineering Committee on Oceanic Resources (ECOR) which has interest and expertise in the design installation and maintenance of ocean data buoy systems and other instrumentation and the Advisory Committee on Marine Resources Research (ACMRR) of FAO which was originally established to provide scientific advice to FAO but the Commission, in need of a source of advice on fisheries oceanography, turned to FAO and the ACMRR to ensure that fisheries interests were adequately represented in oceanographic programmes planned by IOC.

Since IOC is looked upon as the major intergovernmental coordinating body in the UN system, the Commission and UNESCO have worked out a number of mutually supportive agreements to fulfill the responsibilities identified by the UN in their roles in marine scientific affairs. Of the various agreements ICSPRO deserves special attention in that it was drawn up in 1969 by the Executive Heads of the UN, FAO, UNESCO, WMO, and IMO all of whom agreed to contribute to the Secretariat of the IOC in sustaining the work of the Commission. Through this vehicle secretariat staff are posted to IOC headquarters and assistance is provided in subsidizing meetings and conferences.

Organization & Structure

An Assembly of all member States serves as the policy forum of the Commission and as such it reviews, assesses, and makes recommendations on

programmes of the Commission including the budget. The Assembly normally meets every two years but may meet in extraordinary session as required.

The Executive Council is made up of the Chairman, four Vice-Chairmen and one quarter of the total membership of the Commission. The make-up of the Council reflects to some extent the traditional political groupings of the UN but the conduct and contribution to ocean sciences by member States have an important bearing on the choice of countries serving on the Council. The Council meets twice between Assembly sessions with one such meeting immediately preceeding the Assembly to set out the arrangements of the Assembly sessions.

The Council is the executive body of the Commission responsible for the implementation of all scientific, service and training programmes. It reviews and assesses the work of the Commission's subsidiary and advisory bodies and initiates policies, programme budgets and action plans for consideration by the Assembly.

Ocean Sciences

The scientific and technical programmes of the Commission fall into three main categories, Ocean Sciences, Ocean Services and Training Education and Mutual Assistance. All of these programmes are intended to render assistance to the member States of the Commissions and as such they contain programme elements on both global and regional scales.

Ocean Sciences

The global scientific programmes reflect the interest of the major oceanographic countries of the world and are directed at large scale studies of ocean phenomena or processes related to climate, ocean circulation; marine pollution and mapping of sea floor morphology.

The current focus of the physical oceanographic programmes of the Commission are directed to ocean-atmosphere interactions and participation in a number of large scale experiments such as the Tropical Oceans and Global Atmosphere (TOGA) experiment which is examining the interannual variability of the tropical oceans. For this programme very large data sets will be gathered from around the world in the tropical area for a period of some 10 years. The Commission is heavily involved in these research investigations by providing the means for the planning of the experiments as well as the mobilization of the necessary support functions.

The protection of the marine environment against pollution has been a long standing science undertaking of the IOC. The Commission through GIPME has conducted a major global monitoring programme on oil pollution and an assessment of the health of the oceans. One of the priorities of this work has been given to baseline studies to establish the basis for future assessments on the health of the of the oceans. Some of the essential elements of this investigation include the preparation of international chemical standards, methodologies, inputs, pathways and effects.

Bathymetric charts of the ocean representing the morphology of the sea floor are indispensable in the conduct of marine science and are of

practical value for all aspects of mineral exploitation, fisheries and engineering construction. Although there is a strong service interest in the provision of such charts the IOC and SCOR together prepared the scientific specifications for a new world bathymetric chart series. In response to the scientific need the IOC with the International Hydrographic Organization (IHO) established a Guiding Committee for the Global Bathymetric Chart of the Ocean (GEBCO) which studied and interpreted bathymetric data gathered from all over the world by many countries. The resulting Fifth Edition of GEBCO represents the most definitive series of morphological charts produced to date.

Ocean Services

At the core of successful scientific cooperation in the marine science field has been the provision of "services" or information to users in a regular fashion or upon special request. Three such services have been set up by IOC, the International Oceanographic Data Exchange Programme (IODE) the Integrated Global Ocean Service System (IGOSS) and the International Tsunami Warning System (ITSU).

The objectives of such ocean services are twofold in nature, one being to serve the scientific community and the second governments and the public. The first form of ocean services is the collection, archiving, storage, retrieval and exchange of ocean data which are needed for research purposes and the second form is a kind that governments and the public require for the intelligent organization and management of marine affairs.

Applications of such information include: the proper use of the oceanic living and non-living resources, the safeguard of the marine environment, weather forecasting and marine transport, protection and the development of coastal areas and safety of life and property. The IODE has been one of the most successful services of the IOC in setting up international standards, criteria, formats and modes of handling and exchanging of oceanographic data on a global and regional basis. It has dealt with common problems of processing, storage retrieval and standardization of physical, chemical and marine pollution data to the point that national data sets can be merged and utilized on an international basis.

Its traditional role of handling data on a non-real time basis for scientific research has changed very dramatically recently in that IODE and IGOSS are now addressing real time service requirements of providing information and interpretations of data to the offshore oil and gas operations, the fishing fleets, and coastal protection authorities. The primary role of IGOSS in this work is the facilitation of real time oceanographic data observations to users. For most practical purposes the timeliness is of the order of days but in data sparse areas of the oceans, environmental data up to several weeks can be meaningful and useful in the preparation of oceanographic information products for climatic purposes.

The key functions of IGOSS centre on the establishment of the necessary infrastructure systems required for the rapid dissemination of oceanographic data through both global and national telecommunications systems.

The mainstay of IGOSS, as it presently exists, is the worldwide BATHY/TESAC programme which consists of the collection, processing and exchange of BATHY data (profiles of ocean temperature with depth) and TESAC data (temperature/salinity/current profiles with depth). Globally, the data from about 45,000 profiles are exchanged annually over the Global Telecommunications System (GTS). Data so exchanged are used by participating countries to produce surface and subsurface descriptions and projections of temperature and salinity features of interest to ocean users.

The IGOSS concept which was originally challenged scientifically as being inappropriate is now recognized as being essential to the success of many of the on going and planned global ocean experiments for coupling of ocean processes with climate modelling. Fortunately the basic infrastructures are now in place and it is a matter of expanding and strengthening the system to meet the needs of climate and operational users.

Training, education and mutual assistance has always received a great deal of attention in the IOC in recognition of the fact that member States are in very different stages of development in the field of marine science. Improving the marine scientific capabilities of the less developed Members in the IOC is a necessity for the achievement of the IOC's programmes in science and services.

The strict application of this programme is to assist developing countries in participating in IOC programmes. The problem is that it is interpreted much more broadly and considered as a requirement for all forms of assistance in education, training, infrastructure build-up, equipment and aid, not all of which can be provided by the IOC.

Nevertheless, the Commission has been successful in reviewing the needs of developing countries regarding training, education and mutual assistance for and on behalf of other U.N. Agencies. In this respect it has served a very important function in promoting and coordinating the needs of developing countries for funding from the U.N. and other agencies.

The training and educational initiatives taken within the Commission itself are best reflected in the general policy of establishing regional bodies to serve the interests of member States. The success of these bodies is very much dependent on assistance from the major donor countries which for political reasons have vested interests in one or another region.

Subsidiary Bodies

The delivery mechanism for all the programmes of the IOC is through its subsidiary body structure which is made up in the form of a number of working committees, regional bodies, guiding committees or groups of experts.

The working committees are the principal subsidiary bodies of the commission charged with the responsibility of examining problems or implementing programmes that are global in scope. The regional bodies reflect the particular concerns and interests of member States in a

regional sea or ocean, but nevertheless, attempt to implement or participate in global programmes as appropriate. The guiding committees and groups of experts are tasked with specific assignments and generally speaking undertake work in cooperation with other international organizations. Most if not all such bodies in the IOC are jointly sponsored with another agency.

The subsidiary bodies of the IOC are listed in Appendix 1 along with a description of the functions of those which are judged to be important to the Department.

The Department and the IOC

Canada was one of the founding members of the IOC and has been an active member State in numerous studies, Working Groups and other activities of the Commission. Canadian representatives and scientists have served as Chairman and First Vice-Chairman of the Commission as well as chairmen of Working Committees and International Programme Groups.

The Canadian delegation to the IOC has consistently identified the work of IODE, IGOSS, GIPME, GEBCO, and ITSU as being high priority programmes in terms of Canadian interest and commitment. With the emergence of the World Climate Research Programme (WCRP) and its close linkage with ocean processes Canada strongly endorsed the SCOR-IOC Committee on Climatic Changes and the Ocean (CCCO). In the view of most countries represented at IOC the work of CCCO would have to be judged as having the highest overall priority not only for its scientific merit, but also for its importance and relevance to a major world problem.

The OSLR and OSNLR programmes are in the formative stages of development but hold considerable potential for future cooperative programmes by both the developed and developing countries of the IOC.

Canada has been a very active participant in the work of IODE for good reason since more than half of the oceanographic data in Canada's area of interest has been taken by foreign ships operating off our coasts. Based on an estimate of the cost to collect the data at sea, Canada has received, through international exchange, data valued at more than $250 million dollars.

DFO scientists and managers have played a major role in the development and implementation of IGOSS providing three chairmen and numerous experts (over the years). The programme has allowed Canada access to near real-time data taken by foreign vessels estimated to be of the order of $4 million per annum from the BATHY/TESAC programme.

The IGOSS service-oriented philosophy of the provision of near and real-time services sparked technological developments in ocean instrumentation throughout the world. Canada has done remarkably well in exporting oceanographic instruments and in gaining experience with new automatic and semi-automatic data collection/transmission systems.

Users of national IGOSS services have been the offshore oil and gas industries and as better data collection systems come on line fisheries applications will be possible through the provision of synoptic ocean thermal structure data that can be used to help deliniate areas of high concentrations of fish. It is estimated that if one day could be saved of an average 10 day trawler trip the benefits would be of the order of $7,500. For a large fleet the potential benefit would be well into the millions of dollars annually.

GIPME from its very beginning has attracted some of the world's best authorities on pollution studies. For this reason, and the fact it has been of benefit to Canada in pollution studies it has been strongly supported. A Canadian scientist played a leading role in the GIPME Marine Pollution Monitoring Pilot Project in his analysis and synthesis of the data which enabled this country to gain a better appreciation of the concentration and distribution of oil pollution in Atlantic and Pacific waters and background levels in Canadian coastal areas than could ever have been gained from a national programme.

It would not be overstating the case to state that without Canada assuming the major responsibility for the cartography and printing of GEBCO the fifth edition would still remain unpublished. In so doing the Canadian Hydrographic Service gained access to the hydrographic data and expertise from all over the world. This is now being used to considerable advantage in automated cartography and in the development of a digital hydrographic data base.

The provision of tide and seismic stations by Canada filled a major gap in the international Tsunami Warning system of the Pacific. Canada has also provided leadership for the Coordination Group and conducted a considerable amount of research on the subject which has resulted in the publication of a definitive book on the subject.

In recent years Canada has been a leading advocate in calling for an examination of the role and functions of the Commission with the objective of helping the Commission to respond more effectively to the wishes of the member States in the advancement of ocean research and services. At present there is a strong majority of developing countries which need advice and assistance in the development of their coastal zones and the IOC will have to shape its scientific programmes accordingly to embrace these needs. The challenge for the Commission and those concerned will be in seeking an accommodation between the interests of the developed and developing countries. The problem essentially lies with the developed countries who must gain the trust of the developing countries in planning research programmes with some practical and short term benefits to less fortunate States. On the other hand the developing countries must recognize the need for global programmes and be more open in providing access to large marine areas.

From the point of view of being the principal international body for coordinating marine science affairs in the UN family the IOC must consider its role within the new ocean regime following the Third UN Conference on the Law of the Sea. The matter has been addressed by several levels of study teams and the recommendations are being followed up in proposed changes to the Statutes of the Commission.

The Canadian position for the IOC must be one of support, with a further requirement of participation in ocean experiments in the Pacific tropical areas.

THE FOOD AND AGRICULTURAL ORGANIZATION

THE FOOD AND AGRICULTURE ORGANIZATION (FAO)

FAO was the first United Nations Specialized Agency created after World War II by the signing of its Constitution on October 16, 1945, Quebec City.

Purpose

The aims of FAO are to raise the levels of nutrition and standards of living by increasing production from farms, forests, and fisheries. Its programmes include the means of improving efficiency in the production and distribution of food and agricultural products, marketing, food planning, and the global exchange of new types of plants and agricultural technology. Field activities account for most of the work of the staff and of its budget. A major portion of its resources come from the United Nations Development Programme (UNDP) and a few donor countries for whom FAO carries out aid programmes. FAO also organizes and provides help to countries confronted with drought or famine.

FAO is the dominant world body in all matters of food production, distribution and food security. Agricultural related activities dominate its work but it plays a major world role in forestry and fisheries, the latter functions are conducted through its Department of Fisheries.

Organization and Structure

FAO is governed by a Conference which normally meets every two years. It determines the policy, budget, work programme, the general rules of the organization, and handles the election of the Director-General, membership on the Council and its Chairman. Approval of conventions, agreements and the establishment of commissions, committees, conferences, are usually referred to the Conference for approval.

The Council of FAO was established by the Conference at its third session (1947) which replaced the original "Executive Committee of FAO". The Council acts as the executive organ of the Conference and holds at least four meetings intercessionally. At the session immediately following a Conference, it elects the Programme and Finance Committee and the Committee on Constitutional and Legal Matters. The Council serves as the executive body for the Committee on Fisheries (COFI), the Committee on Forestry (COFO), the Committee on Agriculture (COAG), and the Committee on World Food Security (CFS).

Committee on Fisheries

Of all the Committees and bodies in FAO the Committee on Fisheries or COFI as it is known is the most important FAO function of direct concern to the Department. The Committee on Fisheries which was established by the Conference at its Thirteenth Session (1965) was given the following terms of reference:

(a) "review the programme of work of the Organization in the field of fisheries and their implementation;

(b) conduct periodic general reviews of fishery problems of an international character and appraise such problems and their possible solutions with a view to concerted action by nations, by FAO and by other intergovernmental bodies;
(c) review specific matters relating to fisheries referred to the Committee by the Council or the Director-General, or placed by the Committee on its Agenda at the request of Member Nations and to make recommendations as appropriate;
(d) report to the Council or tender advice to the Director-General as appropriate, on matters considered by the Committee."

The establishment of the COFI led to the organization of the Department of Fisheries in FAO. From the very beginning Canada, which was instrumental in including fisheries in the charter of FAO, provided the leadership not only for COFI but the Secretariat and the Department of Fisheries.

The importance paid to COFI in its early days by member Nations was significant in that delegations were then led by very senior fisheries officials and COFI became the recognized forum for discussion of world problems in fisheries development and management. COFI initally focussed attention on technical assistance and infracture build-up and avoided any suggestion of a fisheries management role involving enforcement actions, quota settings, or regulations. These matters were left to other bodies, however, COFI did provide the scientific input and argued the case for the recognition of sound biological advise for fisheries regulations.

As the lead organization in fisheries, COFI and the Department of Fisheries undertook the collection of accurate information on estimates of fisheries resources through a world appraisal of fishery resources by member States and international bodies. FAO signed agreements with international organizations or established its own sub-commissions and offered the services of experts and assistance to facilitate this work.

The early seventies brought about many changes in the affairs of the Specialized Agencies with attention being focussed on environmental issues. FAO joined ranks with the IOC, WMO and IMO and worked effectively as a team member on emerging pollution problems and its effects on the living resources. The Advisory Council on Marine Resources and Research (ACMRR) an expert body established by COFI, became one of the two scientific advisory bodies to the IOC dealing in particular with pollution problems and living resource questions.

The role played by FAO in economic development and technical cooperation changed abruptly in 1971 when the UNDP replaced its system of working through Agencies to working directly with governments. The move dealt a serious blow to the FAO fisheries development programmes by the removal of a large part of its funds. The results of the Third United Nations Conference on the Law of the Sea worsened the problem for COFI in that even more assistance was required to help developing countries obtain the capability of managing their newly acquired fisheries resources. Its charcter changed from being a scientific forum to one concerned with technical assistance and development.

Despite its difficulties, COFI has provided a great deal of assistance on the development and management of fisheries and maintained very useful scientific services. The matter of funding still remains a most critical issue and is the limiting factor in COFI's long term capacity to provide the assistance.

The outbreaks of drought and famine in Africa led to the organization of an International Undertaking on World Food Security and an Early Warning System to keep watch on food-deficit countries. The response in COFI, has been a strong emphasis on the importance of inland fisheries and aquaculture in and the development of small fishing ventures in disadvantaged communities.

The new strategies and policies of COFI are to:

(a) "develop fishery resources hitherto neglected or lightly exploited;
(b) make better use of fish catches by reducing spoilage and waste;
(c) accelerate aquaculture and inland fisheries development; and
(d) upgrade small-scale fisheries in order to improve substantially the socio-economic conditions of small fishing and farming communities;"

Regional Functions

Of all the UN Specialized Agencies FAO has one of the largest overseas operations of any of the UN bodies with more than 2.500 professional staff working in Regional Offices or on field projects. In fisheries alone, some 20 formal bilateral or multilateral international commission and councils have been established to serve as part of the delivery system for services to and from Headquarters. It is in this way that significant help is rendered in the form of infrastructure support, fisheries information, data, and statistics. A few of the more important fisheries bodies are:

- Regional Fisheries Advisory Commission for the South-west Atlantic
- Commission for Inland Fisheries of Latin America
- European Inland Fisheries Advisory Commission
- Indian Ocean Fishery Commission
- Western Central Atlantic Fishery Commission
- Fishery Committee for the Eastern Central Atlantic
- Committee for Inland Fisheries of Africa
- Coordinating Working Party on Atlantic Fishery Statistics

FAO in collecting information on fisheries has maintained an effective information service through a series of highly regarded publications, in particular the Yearbook of Fishery Statistics, Catches, and Landings which contains on a world-wide basis the nominal catches of fish, crustaceans, molluces, and other aquatic animals taken for all purposes other than recreation. National centres in member countries provide these data directly to FAO or through fisheries commissions and regional fishery bodies. For the Atlantic area the various bodies work through a Coordinating Working Party on Atlantic Fishery Statistics (CWP) which standardizes reporting forms, procedures, definitions, classifications and other related documentation.

A companion volume on fishery commodities is also published annually on the production and international trade of fishery commodities. Governments and international organizations cooperate with FAO in providing these data.

The Department of Fisheries, of FAO in association with the IOC provides a scientific information service in science technology and management of the freshwater and aquatic environments. The system operates through national input centres in member States who contribute information, titles and abstracts. The Aquatic Sciences and Fisheries Information Service (ASFIS) as it is known links the various information systems together and provides monthly abstracts of journals current-awareness services, contents tables, in marine science, freshwater, aquaculture and fisheries.

The abstracting service, the Aquatic Sciences and Fisheries Abstracts (ASFA) is a joint undertaking between FAO, and national ASFA Input Centres. These centres are collectively responsible for scanning, selecting, abstracting and indexing relevant papers from more than 5,000 serials, reports etc. The ASFA printed journal is published monthly with each issue containing approximately 1,200 abstracts.

The Department and FAO

The role of COFI has changed so dramatically in the past 10 years from once being a leading fisheries science body to one which is now preoccupied with the politics of aid and technical assistance. The policies of FAO in seeking funding from donor countries is not one which is supported by Canada in view of this country's preference to work bilaterally with developing countries. FAO has been openly critical of Canada for its position and this situation coupled with other rifts have led to major differences of opinion and Canada has lost out for example, on senior appointments to FAO.

There does not appear to be any accomodation of views with the present Director-General and the Department is left with little choice but to maintain a credible position despite the unpleasantness of the situation.

THE WORLD METEOROLOGICAL ORGANIZATION

THE WORLD METEOROLOGICAL ORGANIZATION (WMO)

The World Meteorological Organization was created in 1951 as the successor to the International Meteorological Organization founded in 1873.

Purpose

Its purpose is to coordinate, standardize and improve world meteorological and related activities and to encourage the exchange of meteorological and related information amongst countries. WMO has in effect moulded a world wide meteorological network through its efforts to facilitate the establishment of networks of stations and centres, the exchange of meteorological information, and the standardization of observations. It has played a major role in furthering the application of meteorology to aviation, shipping, water problems, agriculture and the encouragement of research and training in meteorology. With a membership of some 148 States each with their own meteorological services the achievement of the above is a remarkable feat.

Organization

The affairs of WMO are handled through a Congress comprised of all member States and an Executive Committee made up of 24 Members and six Presidents of Regional Associations. The Congress meets every four years and the Executive Committee meets annually.

The work of the Organization is facilitated by Regional Associations and Technical Commissions. Any Member country has the right to belong to a Regional Association if its network of meteorological stations extends into the region. The six Associations are Africa, Asia, South America, North and Central America, Southwest Pacific and Europe. They meet once every four years. Each Member country also has the right to be represented on Technical Commissions which are: Basic Systems, Instruments and Methods of Observations, Atmospheric Sciences, Aeronautical Meteorology, Agricultural Meteorology, Marine Meteorology, Hydrology, and Special Applications of Meteorology and Climatology.

The Regional Associations and Technical Commissions report to the Executive Committee and Congress and can be assisted by Working Groups and Rapporteurs. In addition to the technical subjects addressed by these bodies the 1975 Congress of WMO identified more broadly based concerns covering world weather watch research and development, meteorological applications, hydrology, technical cooperation, education, and training.

The two most important programmes of WMO as they affect oceanography and fisheries are, World Weather Watch (WWW), and the Global Atmospheric Research Programme (GARP).

World Weather Watch (WWW)

The World Weather Watch (WWW) plan of WMO was approved in 1967. The three principal components of the WWW are the Global Observing System, (GOS) a Global Data Processing System, (GDPS) and a Global Telecommunications System (GTS). In its simplest terms GOS is a system for

making countless standardized weather observations at fixed times from land and sea stations throughout the world. These observations are supplemented by weather radars, radiation stations, aircraft, and satellites. The GDPS comprises a network of world, regional and national meteorological centres which process the data from the WWW programme. The system consists of three World Meteorological Centres, and twenty-three Regional Meteorological Centres and well over 100 national centres. The WWW makes hemispheric forecasts twice a day while the regional centres provide more detailed analyses and forecasts for their respective regions. The GTS is the world-wide system for collecting weather information and distributing it to the world, regional or national meteorological centres. This system is also used by oceanographers for the transmission of oceanographic data collected at sea by ship and drifting buoys.

The Global Atmospheric Research Programme (GARP)

The resolutions adopted by the WMO and the UN in endorsing and supporting WWW recognized not just the public services components of meteorology but its importance to the physical sciences. As a consequence WMO and the ICSU established in 1967 the Global Atmospheric Research Programme as the research arm of WWW. It soon became the chief research activity of WMO.

The objectives of GARP are twofold, first to extend the range, scope and accuracy of weather forecasts and secondly to understand the physical basis of climate and climatic fluctuations. The programme is guided by a Joint Organizing Committee made up of 12 eminent scientists appointed by WMO and ICSU.

The second GARP objective, climate, led to consideration of the role of the oceans and the development of coupled ocean-atmosphere models. It is this objective of GARP that is now being addressed by oceanographers throughout the world especially by SCOR and the IOC and through the CCCO.*

The Department and the WMO

Canadian membership in WMO is provided by the Atmospheric Environment Service of the Department of Environment. DFO's involvement with WMO comes through the IOC and its IGOSS and climate programmes.

DFO oceanographers and AES meteorologists have been working together nationally and internationally on the development and expansion of IGOSS services to make available ocean data for the public. The provision of information on storm warnings, forecasts, and wave analyses for ship routing users, fishermen and coastal protection are gradually emerging as a regular oceanographic service of DFO and DOE.

The Department was a major contributor in the Global Atlantic Tropical Experiment (GATE), the first major programme of GARP when departmental

* Described in the IOC and NGO sections of this report.

scientists aboard the weathership CCGS "Quadra" spent about one hundred days collecting basic atmospheric and oceanographic data in the equatorial belt of the Atlantic Ocean.

FGGE, the First GARP Global Experiment, took place in 1978 with the objective of extending the range, scope and accuracy of weather forecasts and of providing a better understanding of the physical basis of climate and climatic fluctuations. Using earth stations, balloons, satellites, ships and drifting buoys, the observational system supporting FGGE was the most extensive ever undertaken. Canada supplied and sold most of the drifting buoys and the Department undertook the analysis of all the drifting buoys used in this experiment. The FGGE Joint Organizing Committee set up by WMO and ICSU was under the chairmanship of a Canadian.

Former and present departmental scientists have served as Chairman of IGOSS and been instrumental in gaining recognition of the value of ocean service functions in Canada.

THE INTERNATIONAL MARITIME ORGANIZATION

THE INTERNATIONAL MARITIME ORGANIZATION
(IMO)

The IMO formerly known as the Intergovernmental Maritime Consultative Organization (IMCO), was established in 1958 to facilitate the exchange of technical information on shipping with a special responsibility for safety in maritime operations at a United Nations Conference held in Geneva in 1948. In the ten year period prior to the formation of IMO, however, international concerns were being expressed over the threat of marine pollution from ships, particularly from oil carried by tankers. An international convention on this subject was actually adopted in 1954, four years before IMO came into existence, when IMO assumed the responsibility for administering this convention in 1959. It provided the formal intergovernmental machinery for cooperation amongst governments not only in the field of governmental regulations and practices relating to international shipping, maritime safety, navigation but also marine pollution from ships.

Organization

The Organization has four principal organs, the Assembly, the Council, the Maritime Safety Committee (MSC), and the Marine Environment Protection Committee (MEPC). The Assembly is the governing body of the Organization which determines policy, decides upon the work programme, and votes the budget. It also approves financial regulations, elects the Council and approves the appointment of the Secretary-General. All member States which now number 127 are represented in the Assembly.

The Council consists of eighteen member States elected by the Assembly for a term of two years. It is responsible for the execution of the work programme of the organization and performs the functions of the governing body between sessions of the Assembly.

The Maritime Safety Committee consists of twenty-four member States elected for a four year term by the Assembly. It is responsible for the technical aspects concerning maritime safety and efficiency of navigation. It performs its functions mainly through Sub-Committees or other subsidiary bodies. Representation is generally open to all States of the Organization, or to any State not a member of IMO, if it is a Party to a Convention in respect of which the Committee performs functions.

The Marine Environment Protection Committee is a permanent subsidiary body of the Assembly whose membership is open to all member States of IMO as well as those States which are Parties to Conventions in respect of which the Committee performs functions. It is responsible for administering and coordinating the activities of IMO relating to the prevention and control of marine pollution from ships, vessels, and other equipment operating in the marine environment.

Other Committees

The Legal Committee is a permanent subsidiary body of the Council and is charged with the consideration of legal matters of concern to the Organization. It is open to all member States of IMO. The Committee on

Technical Cooperation and the Facilitation Committee are two other subsidiary bodies of the Council. The former performs advisory functions in respect to technical assistance for developing countries and the latter advises the Council on matters relating to the facilitation of maritime traffic.

IMO's Conventions

In the 28 years since it was first established IMO has adopted and opened for ratification some thirty conventions and protocals. Well over 500 codes and recommendations concerning maritime safety, the prevention of pollution and related matters have been approved for use by member States. A list of the Conventions and some of the Codes are presented in Appendix II.

Maritime safety was one of the earliest issues faced by IMO and appropriately enough the first conference organized by IMO adopted the International Convention on Safety of Life at Sea (SOLAS) which came into force in 1965. This Convention is the basic international instrument dealing with matters of maritime safety. Other instruments and guidelines for member States are: the International Convention on Load Lines, 1966 and amendments; The International Regulations for Preventing Collisions at Sea, 1972. Other conventions and regulations govern passenger and container ships, routing, navigation equipment, crew training, offshore drill rigs, and carriage of dangerous goods.

IMO has continued to work in relation to the prevention and control of marine pollution not only by oil but also by other vessel-borne hazardous substances. When the International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL) of 1954 was amended following the loss of the "Torrey Canyon" a series of actions followed. The first of which was the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties. This Convention gives a State the right to intervene in incidents on the high seas which are likely to result in pollution of their coasts and territorial waters. A 1973 Protocol extended the right to intervene in incidents involving substances other than oil.

The original 1954 Convention on oil pollution was limited and although amended several times it soon became obvious that a completely new instrument was required to control pollution of the sea from ships. In 1973, IMO convened a major conference to discuss the whole problem of marine pollution from ships with the result that a comprehensive anti-pollution convention, the International Convention for the Prevention of Pollution from Ships (MARPOL) emerged. This Convention deals not only with pollution from oil but also with pollution from chemicals and other harmful substances, such as garbage and sewage. For a number of reasons States did not ratify the Convention, but after a series of tanker accidents IMO convened another Conference on Tanker Safety and Pollution Prevention in 1978. This Conference adopted a Protocol to the 1973 MARPOL Convention which introduced further measures on tanker operational techniques and construction requirements. The Protocol of 1978 in effect absorbed the MARPOL Convention and the combined instrument is now referred to as MARPOL 73/78 which came into force in October, 1983.

In recognizing IMO's role in marine pollution it was designated as the responsible UN Agency for the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter 1972 (LDC)* when it came into force in 1975 under the auspices of the United Kingdom.

Liability and Compensation

Related to the pollution prevention conventions have been a series of Conventions dealing with liability and compensation. The first of which was the International Convention on Civil Liability for Oil Pollution Damage, 1969 (CLC), which entered into force in 1975, following the "Torrey Canyon" disaster of 1967. It introduced a system which enables victims of oil pollution from ships to claim compensation from the shipowner who was made strictly responsible for such damage. Objections to the Convention were raised in the sense that the liability limits established were too low. As a result, another conference was convened by IMO in 1971 which adopted the Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage in 1978. Unlike its predecessor which puts the onus on the shipowner, this Fund is made up of contributions from oil importers. The combination of the two Conventions thus spreads the burden of compensation more equitably between the shipowners and the owners of the cargo. The limits of liability for both Conventions were increased by Protocols adopted in 1984.

Technical Assistance

Technical assistance activities have assumed major importance in IMO to enable developing countries to ratify IMO conventions and to reach the standards contained in the conventions and other instruments. The Organization has been involved in the development and improvement of shipyards, navigational aids, maritime safety, administration, anti-pollution arrangements and the provision of high level training for marine personnel, port managers, examiners, and surveyors.

Relations with Other Organizations

With the use of moored and drifting buoys for oceanographic studies the legal aspects of these devices has been the subject of a collaborative study of IMO and the IOC. A plenipotentiary conference was held to discuss the identification and positioning of buoys and the question of liability for damage caused by or as a result of drift or operation. A Convention was not forthcoming at the time, but the issue is once again under discussion and in all likelihood IMO will be asked to convene another such conference.

One of the most important cooperative arrangements established between IMO and the other UN Agencies is the Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) a body which is jointly sponsored by the UN, FAO, UNESCO, WMO, WHO, IAEA, UNEP and IMO. IMO supplies the principal secretariat functions for this Group and relies on its work in the identification of noxious and hazardous cargoes which may be considered as potential pollutants and hence subject to codes or recommendations.

* The LDC is covered separately in this report.

The Department and IMO

Although the Department of Transport is most directly involved in the affairs of IMO from the point of view of marine transportation, safety, standards, etc. IMO's work has considerable relevance to the Department in respect to navigational standards, ocean dumping, pollution control, liability and compensation.

The Canadian position carried forth to the meetings of IMO whether at the Assembly, Council or subsidiary body level invariably calls for a carefully thought out departmental position paper that could cover marine pollution standards, liability and compensation, or maritime codes and practices. In the past years input from the Department has been judged to be of high quality and representative of the hydrographic, fisheries and oceans constituencies in Canada. However, in recent years with changes in personnel and shifts of priorities the IMO functions may not have been receiving the attention they deserve. The complexity and significance of IMO's work not only in respect to its impact on Canadian legislation and regulations is of such significance that the Department must remain closely associated with the Department of Transport and IMO.

THE LONDON DUMPING CONVENTION

THE LONDON DUMPING CONVENTION

During the late 1960s and early 1970s, a wave of public concern over the environment spawned many important international conferences and agreements. One of these, the United Nations Conference on the Environment held in Stockholm 1972, led to several initiatives including the beginnings of what eventually became the London Dumping Convention.

The Preparatory Committee for the Stockholm Conference established an Intergovernmental Working Group on Marine Pollution (IWGMP) that met in London in June 1971 and recommended that an international agreement, regulating the dumping of wastes at sea, be prepared. The IWGMP met further in Ottawa, Reykjavik, and London before sending the results of its deliberations to the Stockholm Conference on the Environment in 1972. The Conference acted immediately on the proposals and recommended that governments "work towards the completion of and bringing into force as soon as possible, an overall instrument for the control of ocean dumping ...". Pursuant to this recommendation, the Government of the United Kingdom, in consultation with the Secretary-General of the United Nations, convened in London an Intergovernmental Conference which, in November 1972, adopted the so-called London Dumping Convention (LDC), a Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

The Convention entered into force on 30 August 1975 and IMO was designated to be the responsible UN Agency for the administration of the Convention.

A description of the important aspects of the Convention are included in this study in view of the historical involvement and scientific contributions made by this Department in the development of the Convention, and because a senior departmental officer is the Chairman of the Consultative body.

Organization

The first formal consultative meeting took place in London in September, 1976 and has been followed by subsequent meetings at approximately yearly intervals since that time. From an initial list of 15 nations, the number of Contracting Parties has grown to 60. The yearly meetings now entail a major intergovernmental assembly of about 300 representatives and observers, with the heads of many delegations at the Ambassador or equivalent level.

Although the secretariat functions are undertaken by the IMO, the business of the Convention is carried out by the annual Consultative meetings and intersessionally by a Scientific Group dealing with technical matters. The Consultative meeting elects a chairman and two vice-chairmen who are eligible for re-election but may not hold the same office for more than four years.

The regulation of ocean dumping practices is achieved through compatible national legislation of participating States. Each Contracting Party undertakes to adhere to the Articles and Annexes of the Convention and sets in place the necessary national procedures to accomplish these

objectives. Within Canada the regulation of ocean dumping is carried out under the auspices of the Ocean Dumping Control Act of June, 1975, which is administered by Environment Canada. The Consultative meetings therefore assume significance for contracting Parties as the implications of decisions taken and changes made to the Convention affect national legislation and practices.

Purpose

The purpose of the LDC is to prevent pollution of the ocean by the deliberate disposal of wastes at sea. The most common wastes are dredged spoils, and treated sewage sludge. However, many man-made substances, some heavy metals and persistent chemicals can cause harm to the living marine resources and special measures were taken to control or ban their disposal in the ocean.

There are provisions within the Convention that allow Contracting Parties to opt out of amendments to the Articles or Annexes and hence working by consensus is important. As a consequence Amendments to the Annexes are deliberated at length at the Consultative meetings in respect to the scientific and technical merit of such proposals.

Since coming into force in 1975 the LDC has made important decisions concerning, incineration at sea, the definitions of prohibited substances, special care techniques for disposing of contaminated dredge spoils and reviewing additional substances for possible prohibition under the Convention.

The LDC is presently dealing with the highly controversial issue of radioactive waste disposal at sea and under the terms of the Convention, the International Atomic Energy Agency (IAEA) is the competent international authority for the provision of advice to the LDC on radioactive waste issues. In practice this advice is provided through the 'Definition and Recommendations' pertaining to radioactive waste dumping under the Convention. The Definition describes those radioactive wastes that are deemed unsuitable for dumping at sea under the Convention, while the Recommendations outline the procedures and conditions under which lower level radioactive materials may be dumped.

The Department and the LDC

The expert groups involved in the development of models for the safe disposal of radioactive wastes have included Canadian oceanographers and radiological protection specialists. A former senior departmental scientist chaired the GESAMP Working Group which undertook the development of models for the 1985 revision of the IAEA Definition and the IAEA panel which developed the advice on sea dumping and environmental assessment methodologies required for the derivation of the IAEA recommendations for the LDC.

Other departmental scientists have been involved in the development of detailed guidelines for the implementation of the provision of the Annexes which define prohibited substances (Annex I) such as organochlorine compounds, mercury, cadium and their compounds, etc., and Restricted

Substances (Annex II) which may be dumped subject to a permit and inspection and Annex III which covers other factors that must be taken into account in granting a permit.

Canada has made proposals for the amendment of Annex I by the inclusion of lead on the black list. Pertinent to this latter proposal have been negotiations on the status of existing contaminants in Annex I, such as cadmium and mercury and Annex II materials (e.g., zinc, nickel, copper).

An interdepartmental committee has been operating for the past several years on the subject of radioactive waste disposal. Although Canada is not dumping radioactive waste into the ocean, the negotiations at the LDC have significant effects on overall Canadian waste disposal policy issues. Energy Mines and Resources, the Atomic Energy Control Board, the Atomic Energy Control Laboratories and several Crown Corporations are vitally interested in the decisions taken at the LDC. At present the major issue being addressed concerns low-level radioactive wastes only; however, high-level wastes and sub-seafloor disposal practices will be controversial items on the agenda of future LDC meetings.

Within Canada, an application to dispose of waste at sea is submitted through Regional Ocean Dumping Advisory Committees (RODAC) which cover the Atlantic, Quebec, Pacific and Arctic regions. Membership on the committees is made up of representatives from DOE and DFO. Other departments can be represented if their presence is warranted. Permits are issued by DOE following the advice and recommendations of the respective RODAC. Enforcement is through designated Ocean Dumping Inspectors, many of whom are also Fishery Inspectors.

The dumping of pollutants into the ocean always poses a potential threat to fisheries. The recent Pearse report on Canada's Pacific Fisheries viewed the issue important enough to warrant a recommendation that "... the Ocean Dumping Control Act should be assigned to the Department of Fisheries and Oceans, together with related staff and funds".

Because of the impact of the international decisions on national procedures and policies, the preparation of the Canadian brief on international agenda items is critical. DFO, through inter-departmental committee meetings, has a strong and sometimes dominating voice.

THE INTERNATIONAL ATOMIC ENERGY AGENCY×

THE INTERNATIONAL ATOMIC ENERGY AGENCY, (IAEA)

The International Atomic Energy Agency was established in 1957 to "seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world and to ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control, is not used in such a way as to further any military purposes".

The IAEA is not a Specialized Agency of the UN but rather an autonomous intergovernmental organization under the aegis of the United Nations. It reports annually to the General Assembly of the United Nations and as appropriate to the Security Council and the Economic and Social Council.

The organs of the Agency are the General Conference, the Board of Governors and the Secretariat. The General Conference consists of all Members, each having one vote. It normally meets once a year and takes its decisions by majority vote, except on financial matters, amendments to the Statutes or suspension from membership. All these matters require a two-thirds majority.

Organization

The Board of Governors consists of 34 Members designated or elected on a technological and regional basis. It carries out the statutory functions of the Agency and meets approximately every third month. Membership is open to all states, regardless of whether or not they are Members of the United Nations or any of its Specialized Agencies.

The IAEA's activities are designed to promote the development of nuclear power and the use of radioisotopes in medicine, agriculture, hydrology, and industry; to provide scientific information and technical skills and to deal with the legal aspects of nuclear wastes.

The Agency advises Governments on atomic energy programmes, awards, fellowships for advanced study, arranges the loan of equipment, finances research and acts as an intermediary in arranging the supply of nuclear materials.

The International Laboratory of Marine Activity

The work of the IAEA is of direct relevance to the Department in respect to ocean disposal of radioactive wastes for the London Dumping Convention and the operation of the International Laboratory of Marine Radioactivity, which was established in 1961 under a tripartite agreement between the IAEA, the Government of the Principality of Monaco and the Institut Océanographique, Fondation Prince Albert Ier de Monaco.

Purpose

The fundamental objectives of the Laboratory are:

- to perform research on the occurrence and behaviour of radioactive susbtances in the marine environment;

- to ensure quality of the performance and comparability of studies of radioactive substances in the marine environment by national laboratories; and

- to assist member States with regard to marine radioactivity and environmental problems through training of personnel and establishing coordinated research programmes.

The work of the Laboratory is not exclusively devoted to radioactive materials. Work is also performed on non-nuclear pollutants which have been agreed to by UNEP and UNESCO.

Apart from the scientific activities directly related to the Agency's waste management programme, the Laboratory cooperates with FAO, UNEP and IOC on the monitoring and research of marine pollutants. The Laboratory also participants in UNEP's Ocean and Coastal Area Programme in conducting pollution measurements, providing scientific and technical expertise and reference material, and organizing intercalibration exercices.

The Laboratory is organized into three main sections: Marine Chemistry, Marine Biology, and Marine Sedimentology/Geochemistry.

Marine Chemistry

For some 10 years the Monaco Laboratory has been developing analytical methods for measuring transuranic and other long-lived radionuclides present in the marine environment. Measurements have been carried out on sea-water, river water, and suspended materials in order to follow their behaviour from input to fallout in the sediments. A knowledge of this information is of considerable importance in assessing the consequences of sea disposal of radioactive wastes.

The international character of the Laboratory has placed it in the forefront of organizing and coordinating world-wide programmes on interlaboratory comparisons and preparation of reference materials. Intercalibration tests have been conducted on fission products, transuranic elements and chlorinated hydrocarbons. The experience gained has proven to be invaluable in identifying performance, problems, and reproducibility of methods employed in different laboratories around the world.

Marine Biology

The work of the Biology Section covers both radioactive and other materials. Of particular interest have been studies on the vertical transport of pollutants, bioaccumulation and food-chain transfer of transuranic elements, distribution of natural alpha emitters in marine organisms and biokimetic studies of heavy metals.

Marine Sedimentology

Marine sediments are generally considered to be the ultimate sink of most chemical elements. However, it is also known that various elements elements can recycle through sediment water interactions as well as through biological interaction with marine organisms. The programme is designed to

study the very long term effects of pollutants and the fate of materials released into the marine environment from the sediments.

The Department and the IAEA

Departmental contacts with the IAEA have come both directly and indirectly through the London Dumping Convention which referred the matter of radioactive waste disposal to the IAEA. Canadian scientists played a key role in resolving the radioactive waste disposal questions through their work with IAEA and GESAMP.

Scientists at the Bedford Institute of Oceanography maintain a close working relationship with the International Laboratory of Marine Activity because of their involvement in intercalibration exercises and marine monitoring of the Pt. Lepreau nuclear power plant.

A former employee of the Department is currently the Director of the Laboratory and hence the opportunity of acquiring information and intelligence on marine radioactive programmes and expertise throughout the world is readily available.

THE UNITED NATIONS ENVIRONMENT PROGRAMME

THE UNITED NATIONS ENVIRONMENT PROGRAMME, (UNEP)

The UN Conference on the Human Environment, which was held in Stockholm in 1972, produced the "Declaration on the Human Environment" the recommendations of which led to the establishment of the United Nations Environment Programme. The basic aims of UNEP are to facilitate international cooperation on environmental issues, to keep the world environmental situation under review and to promote the acquisition, assessment and exchange of environmental knowledge.

Organization

UNEP was created as a coordinating body rather than an operational agency and thus its role is to stimulate action by governments or international bodies. It has a 58 member policy making body, a Governing Council and a secretariat headed by an Executive Director.

UNEP has adopted a three tiered structure for developing and managing its environmental programmes. It is based in the first instance on an evaluation of reports on the state of the environment an action which is intended to identify emerging problems, secondly, on priorities established by governments and thirdly a decision on those projects selected for UNEP support. Generally speaking other sources of funds are required to justify UNEP action.

The work programme is still based on the Stockholm recommendations and with the priorities established by the Governing Council the following basic programmes have emerged:

1. Human settlements;
2. Human and environmental health;
3. Ecosystems;
4. Oceans;
5. Environment and development;
6. Natural disasters;
7. Energy;
8. Earthwatch;
9. Environmental management.

The Oceans Programme is a major undertaking of UNEP involving the IOC, IAEA and FAO in the implementation of marine pollution studies in critical and sensitive areas. A UNEP Regional Seas Programme has identified the Mediterranean Sea, the Red Sea, the Caribbean region, Gulf of Guinea, and the Straints of Malacca as areas of prime concern. Studies have been conducted on the Mediterranean and the Red Sea and have led to internationally agreed action plans for cleanup. Plans are well underway for initiating studies in the other regions.

The Earthwatch Programme is intended to identify relevant environmental issues which require environmental management. The three main components of Earthwatch are the Global Environmental Monitoring System (GEMS), the International Referral System for sources of environmental information (IRS) and the International Register of Potentially Toxic Chemicals (IRPTC).

GEMS aims at collecting information by monitoring, observing, measuring and interpreting selected environmental variables, related for instance to climate and to health. IRS is a world-wide register of sources of environmental information designed to facilitate the delivery of information to those who need it. IRPTC aims at facilitating the reduction of the hazards presented by chemicals in the environment by supplying relevant background information on the scientific, socio-economic and regulatory aspects of chemicals and providing base data for evaluating the hazards associated with particular chemicals.

GROUP OF EXPERTS ON THE SCIENTIFIC ASPECTS OF MARINE POLLUTION

GROUP OF EXPERTS ON THE SCIENTIFIC ASPECTS OF MARINE POLLUTION (GESAMP)*
Sponsored by IMO, FAO, UNESCO, WMO, WHO, IAEA, UNEP, UN

With marine pollution emerging as an international concern in the United Nations in the mid-1960's. The Intergovernmental Maritime Consultative Organization (IMCO) now known as the International Maritime Organization (IMO) called an extraordinary session of its Council in 1967 to consider what should be done in preventing ocean pollution from events such as the "Torrey Canyon" disaster. FAO, UNESCO and other UN bodies also foresaw marine pollution problems as impacting on their functions and responsibilities and, as a consequence, the matter was referred to the Administrative Committee on Coordination of the United Nations. The understanding that eventually was agreed upon identified the IMO as the responsible Agency for the prevention of pollution from ships, FAO and its Committee on Fisheries as responsible for protecting the living resources of the ocean, WHO for health aspects, UNESCO and IOC for the coordination of scientific research and the evaluation of data on marine pollution, WMO for meteorological research related to airborne transport of pollutants and the IAEA for radiological problems stemming from nuclear energy use.

To avoid duplication of effort, these organizations decided to create a Joint Working Party composed of distinguished scientists whose task was:

(a) "to provide advice relating to the scientific aspects of marine pollution to:

  i) the sponsoring organizations and the Intergovernmental Oceanographic Commission (IOC) on specific questions referred to it;

  ii) to the other organizations of the United Nations system and to States members of the United Nations organizations on particular problems referred to it through a sponsoring organization; and

  iii) to the executive heads of one or more of the sponsoring organizations on such other specific questions within the competence of the Joint Group which may be put to it.

(b) to prepare periodic reviews of the state of the marine environment as regards marine pollution and to identify problem areas requiring special attention".

The experts appointed to GESAMP are selected from the marine science community on the basis of their discipline and geographical distribution. They serve in their personal capacity in the same way as would be expected for anyone serving on an expert body.

Each Sponsoring Organization nominates one to four experts according to its interest in the work for a session. The composition of the Group is reviewed annually to ensure that the disciplinary mix and geographical representation remains balanced and equitable. Some experts are nominated

* GESAMP has been included with the UN Agencies since a number of them are the Sponsoring Agencies.

to serve for a period up to four years, while others may be appointed as required for the particular subjects being addressed.

GESAMP operates through the formation of Working Groups set up to examine specific problems. The Working Groups are made up of selected members from GESAMP and other experts chosen from outside. The Chairman, however, is nominated from the GESAMP representation with terms of reference set out by the Lead (i.e. Sponsoring) Agency in consultation with the Cooperating Agencies. The administrative arrangements and support services for each Working Grup is handled by the Lead Agency and the Technical Secretary. The costs for the intersessional activities of the Working Groups are borne by the Lead Agency and the relevant Cooperating Agencies according to agreements reached in setting up the Group.

The reports or papers from a Working Group are carefully reviewed by the full GESAMP body which may reject them, request changes or suggest additions or deletions. If approved and adopted, the documents become an official GESAMP document. The review of a report is extremely rigorous and requires full consensus and unanimous agreement on the conclusions before release to the Sponsoring Organization.

GESAMP Reports are submitted to the Executive Heads of the Sponsoring Organizations, but they are made available to the member States of the Organizations. Appendix III contains a list of GESAMP publications.

One of the trademarks of GESAMP has been its definition of pollution of the oceans adopted by the 1972 United Nations Conference on the Human Environment, and the 1976 Barcelona Convention on the Protection of the Mediterranean Sea against Pollution and essentially by the UNCLOS with minor changes.

The definition now reads:

> "Pollution means the introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea-water, and reduction of amenities".

GESAMP has made notable contributions on the continuing update of the Harmful Substances Carried by Ships. This work became the reference document for the International Conference on Marine Pollution in drafting the International Convention for the Prevention of Pollution from Ships (MARPOL, 1973). GESAMP has continued this work by evaluating the environmental hazards of additional substances and has reviewed some of those done previously. Other studies include the Review on the Impact of Oil on the Marine Enviornment which, although published in 1976, still represents the most definitive study on the subject.

GESAMP also undertook a global assessment of the pollution of the marine environment in a major report on the Health of the Oceans. It assessed the loading of the sea from all sources as well as the sensitivity of vulnerable waters and semi-enclosed seas.

The Department and GESAMP

GESAMP represents one of the most prestigious bodies working within the U.N. system and nomination to serve in an expert capacity is a major personal achievement and credit. The Department has been well served in this regard in that Dr. M. Waldichuk, West Vancouver Laboratory, has served not only as an expert but as chairman of GESAMP and Dr. G.T. Needler of the Bedford Institute of Oceanography as chairman of the Group that developed the Oceanographic Model for the Dispersion of Wastes Disposed of in the Deep Sea for IMO and the IAEA. A number of other Canadian and DFO scientists have served on GESAMP Working Groups in various capacities.

Continuing support and recognition for this type of service by departmental scientists is essential in maintaining the Department's status in the scientific community in Canada and abroad.

OTHER COMPETENT INTERNATIONAL ORGANIZATIONS IN THE MARINE SCIENCE FIELD

THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION

Two Conferences were held prior to the First World War to achieve some state of uniformity in hydrography but it was not until 1919 that the first International Hydrographic Conference convened in London led to the establishment of the International Hydrographic Bureau in 1921 with 19 member Countries. It became part of the League of Nations during the life of that Organization.

A new intergovernmental Convention was drafted in 1967 and came into force in 1970. From that date the organization became known as the International Hydrographic Organization with its permanent headquarters in Monaco.

Purpose

The purpose of the Organization is essentially to achieve, coordination of the activities of national hydrographic offices, uniformity in nautical charts and documents, adoption of reliable and efficient methods of carrying out hydrographic surveys, and development of the related sciences.

Organization

The national hydrographer or Director of Hydrography is usually the official representative of each member State at the International Hydrographic Conference which is held once every five years. The Conference is the principal body responsible for guiding the progress of the Organization. Amongst other things it examines reports prepared by the International Hydrographic Bureau approves the budget for the next five years, makes decisions on new proposals, regulations and technical functions that affect ongoing hydrographic activities.

One of the important functions of the Conference is to decide on the resident Directing Committee which is made up by the office of President and two Directors who are elected for a period of five years. These positions are salaried posts of considerable prestige and the competition to gain such a seat is intense. If once held by a country the "right" to retain it is fiercely defended. The Directing Committee and international staff constitute the International Hydrographic Bureau which is responsible for the coordination of technical programmes, the provision of advice and assistance to member States.

Voting

The rules governing voting on the affairs of the Organization are somewhat complex in that a member Government has two votes for the voting of a member on the Directing Committee and its President and a number of supplementary votes determined by the tonnage of national fleets. Canada has a total of 5 votes. All member States have an equal voice in arriving at agreed to problems of standardization and in programming work of the Bureau. Voting on technical Resolutions, Amendments to the Convention, Decisions of Conference in respect to General Regulations and Financial

Regulations are governed by their own specific rules. For the exact procedure the reader should refer directly to the Convention and Rules of Procedure.

Activities

The key technical functions of the IHO are handled through a number of Committees and Working Groups of which the most important are the chart Standardization Committee (CSC), the Commission on the Promulgation of Radio Navigational Warnings with IMO, the Working Group on Hydrographic Training and Education with the Fédération Internationale des Géomètres (FIG), and the Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO) with IOC.

The CSC is charged with providing a single set of specifications for nautical charts on a worldwide basis. To this end the Committee is attempting to incorporate all the standards that have been approved by the IHO onto an International Chart (INT) series of small scales covering the world. The original plan was drawn up some time ago by an IHO Committee and is now being implemented by member States. Since its inception in 1971, this programme has resulted in the publication of 90% of the world coverage at agreed to scales, thus reducing the duplication of cartographic effort which previously had existed. Production of the INT charts at large and medium scales is now being examined as a future undertaking.

The Commission on the Promulgation of Radio Navigational Warnings is presently reviewing the operation of the World Wide Radio Navigational Warning Service which was established jointly by the IHO and IMO. Also in cooperation with IMO, a coastal warning service is under development utilizing direct readout and a single worldwide frequency.

A joint FIG/IHO Working Group on Hydrographic Training and Education has developed a guide on International Standards of Competence for Hydrographic Surveyors. An International Advisory Board, with its secretariat at the IHB, has been appointed to further this important international programme.

Other Functions

In respect to the aims and objectives of the Organization, the IHB acts as a source of technical advice and as a coordinating body for the promotion of measures aimed at establishing and strengthening the hydrographic capabilities on a worldwide basis. The Bureau conducts advisory visits to any requesting State and encourages the formation of bilateral and multilateral agreements among nations for technical assistance. Staff of the Bureau are involved in technical meetings and programmes with many international organizations to keep member States informed of developments and requirements for nautical charts. Chief amongst these bodies are the IMO for navigational related functions, the International Association of Lighthouse Authorities (IALA) on buoyage systems, the United Nations on surveying, nautical charting and standardization and the Fédération Internationale des Géomètres.

The IHO in serving its member Governments archives one copy of all new unclassified charts and publications produced by member States, and maintains an information bank on bathymetric soundings in international waters and a computerized tidal constituent data bank. The latter is a service provided by Canada and includes some 4000 tidal stations around the world.

Publications

The IHO issues a number of publications not the least of which is the monthly issue of the International Hydrographic Bulletin which contains current information on new charts, instrumentation, and related publications issued by Members. The International Hydrographic Review is a semi-annual scientific journal which presents papers of scientific interest to the marine community.

The service functions of the IHO are particularly well-documented in their Yearbook, The Repertory of Technical Resolutions, Chart Specifications, and Special Publications.

The Department and IHO

The IHO is of critical importance to the Department particularly for the Canadian Hydrographic Service which is the adhering body. The CHS is obliged to adopt resolutions passed by the Organization and is expected to put into practice the chart specifications, symbolization, standards for horizontal and vertical datums, colour schemes, nomenclature and many other technical matters on Canadian charts in order to meet and comply with international standards.

In this sense the IHO is unique in that of all international organizations it functionally directs, organizes, manages and sets the standards for all Hydrographic Services of the world.

The IHO activities of the CHS involve the preparation of a Canada position which recognize and reflect the views of the Department of Transport, Department of National Defence and survey manufacturing industries of Canada. In this respect the CHS serves the entire marine community in Canada for hydrography and related affairs.

THE NON-GOVERNMENTAL ORGANIZATIONS

INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS

Introduction

Non-governmental organizations are major contributors and active participants in all aspects of marine science from standard setting to planning and conducting scientific research.

The International Council of Scientific unions (ICSU) is the umbrella organization with which most if not all the relevant scientific unions or associations in the world are affiliated. ICSU's scientific affiliations throughout the world and with the UN Agencies places it in a very unique and powerful position in influencing the nature and advancement of world science.

Membership in ICSU is open to scientific unions serving an international function and countries, through their national academies or equivalents. In the case of Canada the National Research Council (NRC) is the adhering body to ICSU. NRC is also the national adhering body for the Scientific Committee on Oceanic Research (SCOR), the International Union of Geology and Geophysics (IUGG), and the International Union of Biological Sciences (IUBS) and others. These three bodies together basically cover the Canadian marine sciences interests of direct relevance to the Department.

International Council of Scientific Unions

The International Council of Scientific Unions (ICSU) was founded in 1919 and is presently composed of 20 International Scientific Unions, 71 National Members, Associates and Observers, and 21 Scientific Associates.

Purpose

Its principal objective is to encourage international scientific activity by initiating and coordinating international scientific research projects. ICSU acts as the focal point for the exchange of ideas, communication of scientific information,and the development of standards in methodology, nomenclature, units, and the like. The various members of ICSU organize symposia, summer schools, meetings of experts, as well as other meetings to decide on policies and programmes. In 1984 more than 300 such meetings were organized around the world. A wide range of publications is produced, including handbooks, proceedings of meetings, professional scientific journals, data, etc.

Organization

The ICSU has a General Assembly, General Committee and Executive Board. The General Assembly meets biennially and includes Representatives of Committees, Commissions and of Unions. Assemblies usually handle the business affairs of the organization such as resolutions, statute changes, financial matters and other relevant factors affecting the organization as a whole. The General Committee consists of 38 members made up of representatives of the Scientific Unions and representatives of National

Members. It meets annually and includes the Sub-Committee on Scientific Priorities and Representatives of Committees, Commissions and Services who may attend as non-voting observers. The Executive Board is made up of the President, Vice-President, Secretary General, Treasurer, Past President or President-elect along with three representatives of Scientific Unions and two National Members. The Executive Board usually meets at least twice a year.

The administration and management of ICSU is handled through a number of Standing Committees: the Standing Finance Committee; the Standing Committee on the Free Circulation of Scientists; the Standing Committee on Admissions; the Standing Committee on the Safeguard of the Pursuit of Science*; the Standing Committee on the Structure and Statutes; the Sub-Committee on Scientific Priorities, Committee on Publications and Communications.

For programmes in multi- or transdisciplinary fields which are not completely within the terms of reference of one of the Scientific Unions, ICSU has created Committees or Commissions. Some of the fields so covered are the Antarctic, Oceans, Space, Water Research, Problems of the Environment and Genetic Experimentation. Those that are involved in functions of specific interest to the department are:

Scientific Committee on Oceanic Research (1957) SCOR
Committee on the Climatic Changes and the Ocean (CCCO)
Joint Panel on Oceanographic Tables and Standards
(with ICES, Unesco and IAPSO)
Scientific Committee on Antartic Research (1958) SCAR.
Committee on Space Research (1958) COSPAR.
Committee on Water Research (1964) COWAR
Committee on Science and Technology in Developing Countries (1966)
COSTED
Scientific Committee on Problems of the Environment (1969) SCOPE
Scientific Committee on Genetic Experimentation (1976) COGENE
Special Committee on Toxic Waste Disposal (1984) TOWD

The Federation of Astronomical and Geophysical Services (FAGS) was formed by ICSU in 1956 as the federation for 10 Permanent Services which are provided by one or more of the Unions. The Permanent Service for Mean Sea Level operated by the International Union of Geology and Geophysics is a service which the Department supports through exchange of data and information.

Relations of ICSU with Intergovernmental Bodies

ICSU has either formed agreements or has been granted consultative status with a number of intergovernmented organizations. The most important of these relations are with UNESCO and WMO, but nevertheless others have been set up with IAEA, ITU, FAO, WHO, ECOSOC and the Council of Europe.

* Proposed to be dissolved subject to approval of the Assembly.

ICSU - UNESCO

One of the first agreements concluded by UNESCO was with ICSU in respect to its international coordination of non-governmental science. An ICSU/UNESCO Coordinating Committee was established to deal with principles of common policy in scientific matters, programmes and organization. The work of the Coordinating Committee is treated very seriously by UNESCO in that it meets about twice a year and is attended by the UNESCO Assistant Director-General for Science, the heads of several departments and by a number of the elected officers and staff of ICSU. The two organizations have set up special committees serving as the ICSU/SCOPE UNESCO/MAB Liaison Committee and the ICSU-UNESCO International Steering Committee for the International Biosciences Networks (IBN) and the ICSU-SCOR-IOC Committee on the Climatic Changes and the Ocean.

ICSU-SCOR-IOC
Committee on Climatic Changes and the Ocean (CCCO)

The SCOR/IOC Committee on Climatic Changes and the Ocean was established jointly by SCOR and IOC in October, 1979. The main function of the Committee is to improve our understanding of the ocean's role in climate change and variability and to identify the most important climatologicaly significant processes for incorporation into mathematical models. The CCCO cooperates closely with the ICSU-WMO Joint Scientific Committee for the World Climate Research Programme.

ICSU- WMO

A very close working relationship has evolved between ICSU and WMO through an agreement that provides for the establishment of joint committees and representation in any meeting of either body when agenda items are of interest to the other organization.

One of the most important outcomes of the working agreement, concluded in 1980, have been the scientific studies launched under the World Climate Research Programme. Some of the relevant parts of the agreement are reproduced here in view of its importance to ocean climate studies.

a) "to invite and call upon all other appropriate national and international organizations and the world community of scientists to collaborate in this globally important task;

b) that the WCRP should have as its long-range objectives, a better understanding of climate change and variability and their causes, whether from natural or human influences;

c) to establish a Joint WMO/ICSU Scientific Committee (JSC);

d) to ensure that the administrative and financial arrangements provide for a large measure of flexibility of the JSC and its supporting staff."

It is from this agreement that SCOR and IOC organized their joint climate studies under the title of the Committee on Climatic Changes and Ocean.

International Unions

Of the 20 international unions whose admission to ICSU has been granted by the General Assembly two are involved in functions of importance to the Department, the International Union of Geology and Geophysics and the International Union of Biological Sciences.

The International Union of Geodesy and Geophysics (IUGG)

The aims of the IUGG, founded in 1919, are to promote the study of all problems concerning the configuration of the earth, its internal structure, the physics of the globe, oceans and atmosphere. The Union is responsible for these studies:

International Association of Geodesy

International Association of Seismology and Physics of the Earth's Interior

International Association of Vulcanology and Geochemistry in the Antarctic

International Association of Geomagnetism and Aeronomy

International Association of Meteorology and Atmospheric Physics

International Association of Hydrological Sciences

International Association for the Physical Sciences of the Ocean.

General Information

General Assemblies of the IUGG are held once every four years at the call of the President of the Union. At a General Assembly, the scientific meetings are normally confined to joint sessions of two or more of the above Associations for discussion of interdisciplinary topics. The programme and the selection of topics for discussion are decided by the Executive Committee of the Union, one year in advance of the General Assembly.

With the concurrence of the Executive Committee of the Union, an Association may also arrange meetings of its own in the intervals between the General Assemblies either simply to deal with topics of specific interest, or jointly with another Association.

The Union may through the Executive Committee, appoint, jointly with other Unions, or jointly among the Associations, or for special purposes, Scientific Commissions which shall themselves have power to create such subcommissions as may be necessary. In the same way, it may sponsor Permanent Services such as the Permanent Service on Mean Sea Level.

The next General Assembly of the IUGG will be held 9-22 August, 1987 in Vancouver, Canada.

The International Association for the Physical Sciences of the Ocean (IAPSO)

This Association is one of the organizations federated under the IUGG and ICSU with the purpose of promoting physicl, chemical and geophysical studies of the ocean. It has the following organizational structure:

Commissions

I. Marine Chemistry
II. Physical Oceanography
III. Marine Geophysics

Committees

I. Tides and Mean Sea Level
II. Physical and Chemical Aspects of the Dispersion of Natural and Artificial Substances
III. Ocean Climate
IV. Oceanographic Advice to Developing Countries

The International Union of Biological Sciences (IUBS)

The aims of the International Union of Biological Sciences, founded in 1922 are mainly to promote the study of biological sciences, initiate, facilitate and coordinate research and other scientific activities that require international cooperation.

General Information

The number of biological sections and commissions within the Union exceed sixty-five. The IUBS has consultative status with ECOSOC, and liaison status with FAO.

International Association of Biological Oceanography (IABO)

One of the associated bodies of the IUBS is the International Association of Biological Oceanography which was founded in 1966. It promotes the advancement and knowledge of the biology of the sea by sponsoring meetings of marine biologists and discussions either during General Assemblies of IUBS or at other suitable occasions. It cooperates with other organizations and individuals with similar aims and interests.

Its membership is drawn from scientific organizations of 48 countries including Canada.

SCIENTIFIC COMMITTEE ON ON OCEANIC RESEARCH

SCIENTIFIC COMMITTEE ON OCEANIC RESEARCH (SCOR)

SCOR was established in 1957 by the ICSU as a non-governmental organization supported by UNESCO. SCOR initiated the International Indian Ocean Expedition (IIOE)(1959-1965) the coordination of which gave rise to the establishment of the Intergovernmental Oceanographic Commission.

Purpose

The purpose of SCOR is to further international scientific activity in oceanic research and it does so by its work in:

a) "examining problems of oceanic research that can benefit from enhanced international action, establishing working groups for the examination of problems related to studies of the marine environment;

b) fostering the recognition of the contribution of individual marine scientists and laboratories;

c) ascertaining the views of marine scientists and interested ICSU bodies on scientific aspects of international ocean activities;

d) cooperating with national and international organizations concerned with scientific aspects of ocean affairs."

Membership

SCOR is composed of three categories of members: nominated, representative, and invited.

Nominated Members - Nominated Members are nominated by an adhering body* to SCOR which may nominate up to three scientists.

Representative Members - Representative Members are the elected Presidents and Secretaries of Affiliated Organizations, the Chairmen of active SCOR Subsidiary Bodies and SCOR Scientific Rapporteurs and nominees from ICSU and its bodies that chose to participate in SCOR.

Invited Members - Invited Members are individual marine scientists who have been invited by the Executive Committee from countries that have not established a Scientific Committee for Oceanic Research.

Adhering bodies to SCOR contribute funds according to a formula which is indicative of the marine science activity of the country. Canada is placed in category IV along with the USSR, UK, FRG, and Brazil. The United States is the only country in category V.

Organization

The Executive Committee of SCOR is composed of its President, three Vice-Presidents, Secretary and ex-officio members made up of the Past President, the Presidents of each Affiliated Organization and two additional co-opted members.

* For Canada the adhering body is the National Research Council

The President may serve for a period of four years and is not eligible for re-election for a consecutive term. The terms of office of the Vice-Presdidents and Secretary, however, are two years and they are eligible for re-election provided that not more than three terms of office are served consecutively.

General meetings are normally held at two year intervals with the Executive Committee expected to meet twice-intercessionally.

Subsidiary Bodies

The work of SCOR is conducted mainly through Working Groups or special committees set up to examine specific programmes or activities. Normally a working group is created to stimulate or focus interest in a particular field of research with the understanding that significant benefits must accrue internationally. Normally, proposals for SCOR Working Groups come from SCOR itself but if from outside bodies, the proposals are carefully weighed before a decision is made. Draft terms of reference and list of potentially interested members must accompany such a proposal.

Membership in a SCOR Working Group is usually limited to eight to ten persons with the Chairman being approved by SCOR. The SCOR Executive nominates one of its members to be the rapporteur of the group provided he/she is not already a member of the group. Any Working Group is expected to work through correspondence as far as feasible and can meet only once within a two-year period provided its work is decisive or nearing completion.

The tenure of all working groups automatically expires at each SCOR General Meeting when their future status is decided. In no case is one extended beyond a six-year period. For joint working groups, disbanding or reorganization is done in consultation with the other sponsoring bodies.

When a working group has discharged its terms of reference it submits a final report to SCOR which is distributed to the participating Committees for dissemination to the oceanographic community. The report may be published in SCOR Proceedings, by UNESCO or another sponsoring body.

Current Scientific Activities

There are currently twenty-three active SCOR Working Groups, Committees and Panels, although several of these have submitted their final reports. WG 70 (Remote Measurement of the Oceans from Satellites), has published its final report, "Opportunities and Problems in Satellite Measurements of the Sea", in the Unesco series of Technical Papers in Marine Science. This report presents an authoritative yet concise publication of requirements, capabilities and present plans for acquiring and using ocean data from satellites.

A relatively new SCOR Working Group, WG 78 on Determination of Photosynthetic Pigments in Seawater, is undertaking an assessment of the current methods of laboratory and field determinations of pigment concentrations in the light of several new technological developments in this field. The Group will make recommendations about methodology and the

intercalibration of instruments to replace the present manual currently in wide use which was produced by SCOR and Unesco some twenty years ago.

The final report of WG 74, "General Circulation of the Southern Ocean: Status and Recommendations for Research" has been published in a report series of WMO. The Southern Ocean is considered to play a prominent role in the zonal exchanges between it and the other oceans and an improved knowledge of its circulation is critical for any advances in physical oceanography and climate studies.

WG 72, The Ocean as a Source and Sink of Atmospheric Constituents has participated in the organization of a major international symposium on "Biosphere-Atmosphere Exchange; Influence of Marine and Terrestrial Biosphere on the Chemical Composition of the Troposphere".

Another working group, WG 65 on Coastal-Offshore Ecosystems Relationships, is concerned with the exchange processes between coastal and open sea marine ecosystems and especially with the transport of nutrients between these systems.

SCOR's present involvement in pollution studies is limited to one group, WG 42, Pollution of the Baltic. While this is a regional group, many of its activities will yield results with more general applicability, for example, the International Patchiness Experiment which includes a study of pollutants in sediments, and a baseline study of contaminants in fish and shellfish. One of the main concerns of this project is the study of the symptoms of eutrophication in the open sea areas of the Baltic.

The past and present SCOR Working Groups are listed in Appendix IV.

Committee on Climatic Changes and the Ocean (CCCO)

Of all the current activities of SCOR, the CCCO is emerging as one of the most important activities ever undertaken. The purpose of the CCCO is to identify ocean-climate research problems requiring increased international attention, to stimulate research activities thereon and recommend to IOC and SCOR how these activities should be implemented. The CCCO being the main international scientific body dealing with the oceans and climate cooperates with the Joint Scientific Committee (JSC) in planning the World Climate Research Programme (WCRP).

One of the primary tasks now being evaluated by the CCCO is the development and implementation of large-scale experiments within the WCRP namely, TOGA and the World Ocean Circulation Experiment (WOCE). The ten year observational period of TOGA began in January 1985 and international data centres are beginning to assemble special data sets and produce analyses of indicators of climate variability. While there are many encouraging TOGA actions underway, CCCO has noted that significant gaps in the ocean observational programmes still exist.

The WOCE Scientific Steering Group is now concentrating on an implementation plan for three core projects: the Global Description, the Southern Ocean, and Gyre Dynamics. The plan is expected to be completed in 1987 and will be reviewed at an international conference in 1988. The

WOCE Scientific Steering Group has also prepared a statement of requirements for WOCE which was presented at the first Informal Intergovernmental Planning Meeting for the WCRP in Geneva in May of this year.

One recent endeavour is the Oceanic CO_2 Monitoring Research Programme which deals with measurements needed to determine and understand the changes in oceanic carbon resulting from human activities - principally fossil fuel combustion and deforestation. The Committee accepted responsibility for planning studies of the changing CO_2 content of the ocean on climatic time scales and requested its Carbon Dioxide Advisory Panel to consider the possibility of obtaining ocean-wide measurements of atmospheric and oceanic partial pressure of CO_2.

The Officers of CCCO and of the Joint ICSU-WMO Scientific Committee for the WCRP (JSC) are concerned that no overall strategy has been developed for studying the coupling between the ocean and the atmosphere, one of the highest priorities for the WCRP. The scientific problem is one of specifying a measurement programme that will provide data which can be used for coupled ocean-atmosphere models designed for climate prediction. The Scientific Steering Groups for TOGA and WOCE are to consider the questions of ocean-atmosphere exchange so as to determine the studies which should be undertaken within these programmes.

Other Activities

SCOR continues to act as the scientific advisory body to the Division of Marine Sciences of Unesco and the Intergovernmental Oceanographic Commission, and has undertaken numerous scientific studies on their behalf, SCOR in association with UNESCO sponsors the Joint Oceanographic Assembly [every six years] which is the major international forum for oceanographers. It provides one of the few opportunities for extensive interdisciplinary discussions which are not possible at most of the smaller, more specialized meetings in the field of marine science. The next Assembly is scheduled for 1988, and was planned for Mexico, however this location has not yet been confirmed.

The Department and ICSU

Much can be written and said about the significance of ICSU and its family of unions, commissions and committees in respect to the scientific affairs of the Department. In the simplest of terms it provides a vista of marine research activities far beyond the relatively small contribution made by the Department and indeed by Canada as a whole. ICSU provides access to a broad spectrum of international marine science that no other body or mechanism can perform. Its strength lies in its intellectual approach to science and for that reason participation by departmental scientists helps assure that Canadian marine sciences are kept at the highest level possible.

ICSU has had under review a major global study which has been given formal approval.

The proposed International Biosphere Programme Global Change will be a vastly expanded IGY, the central focus of which will be to describe and understand the interactive physical, chemical and biological processes that regulate the total Earth System.

The four themes that have been selected are:

1) Terrestrial Ecosystems and Atmospheric Interactions
2) Marine Ecosystems and Atmospheric Interactions
3) Geological Processes: Past and Present
4) Upper Atmospheric and Near Space Environment

The relevance of the Global Change programme to the Department's science is such that a very close working relationship should be developed with Canadian scientific bodies to ensure that, coherent, well-devised and organized marine science programmes are put in place.

THE MULTILATERAL CONVENTIONS AND TREATIES ON FISHERIES

MULTILATERAL CONVENTIONS AND TREATIES ON FISHERIES

Introduction

Canada ia a signatory country to twelve multilateral fisheries Conventions and Protocols. The Agreements, commissions and purpose are reviewed under the headings of Atlantic Fisheries, Pacific Fisheries, Whales, Seals and Endangered Species. Two bilateral agreements, Canada/Norway and Norway/USSR are included to complete the section on Whales, Seals and Endangered Species.

The Atlantic multilateral agreements are:

The Convention for the International Council for the Exploration of the Sea.
Signed: September 12, 1964
In Force: July 12, 1968

Protocol to the Convention for the International Council for the Exploration of the Sea.
Signed: August 13, 1970
In Force: November 12, 1979

Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries.
Signed: October 24, 1978
In Force: January 1, 1979

International Convention for the Conservation of Atlantic Tunas.
Signed: May 14, 1966
In Force: March 21, 1969

Convention for the Conservation of Salmon in the North Atlantic Ocean.
Signed: March 2, 1982
In Force: October 1, 1983

The Pacific multilateral agreements are:

International Convention for the High Seas Fisheries of the North Pacific Ocean (and Protocol).
Signed: May 9, 1952
In Force: June 12, 1953

Protocol amending the International Convention for the High Seas Fisheries of the North Pacific Ocean.
Signed: April 25, 1978
In Force: February 15, 1979

The Multilateral agreements on Whales, Seals and Endangered Species are:

International Convention for the Regulation of Whaling.
Signed: December 2, 1946
In Force: November 10, 1948

Protocol to the International Convention for the Regulation of Whaling.
Signed: November 19, 1956
In Force: May 4, 1959

Interim Convention on Conservation of North Pacific Fur Seals.
Signed: February 9, 1957
In Force: October 14, 1957

Protocol amending the Interim Convention on Conservation of North Pacific Fur Seals.
Signed: October 8, 1963
In Force: April 10, 1964

1976, Protocol to amend the Interim Conservation on Conversation of North Pacific Fur Seals.
Signed: May 7, 1976
In Force: October 12, 1976

1980, Protocol amending the Interim Convention on Conservation of North Pacific Fur Seals of February 9, 1957 as amended.
Done: October 14, 1980
In Force: July 2, 1981

1984, Protocol amending the Interim Convention on Conservation of North Pacific Fur Seals of Feb. 9, 1957 as amended.
Signed: October 12, 1984
Not In Force

Other relevant agreements:

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973

Agreement on Sealing and the Conservation of Seal Stocks in the Northwest Atlantic.
Signed: July 15, 1971
In Force: December 22, 1971

Exchange of Notes, amending the Agreement of July 15, 1971 on Sealing and the Conservation of Seal Stocks in the Northwest Atlantic.
Signed: December 8 and 12, 1975
In Force: December 12, 1975

The Agreement on Measures to Regulate Sealing and to Protect Seal Stocks in the Northeastern Part of the Atlantic Ocean.
Signed: November 22, 1957
In Force: June 27, 1958

THE CONVENTION FOR THE INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA (ICES)

The Convention for the International Council for the Exploration of the Sea (ICES) is a convention signed between Belgium, Denmark, Finland, France and the Federal Republic of Germany done at Copenhagen in 1964. It represented a major step forward by ICES to expand its role and functions from those originally set forth in 1902 as a contract between several countries. The 1964 Convention came into force on July 22, 1968 when Canada acceeded to it.

Purpose

The 1964 Convention still embodies the same fundamental principles of the original ICES Convention in encouraging the study of the sea, but it goes further in stating that the duty of the Council is:

a) "to promote and encourage research and investigations for the study of the sea, particularly those related to the living resources thereof;

b) to draw up programmes required for this purpose, and to organise, in agreement with the Contracting Parties, such research and investigation as may appear necessary;

c) to publish or otherwise disseminate the results of research and investigations carried out under its auspices or to encourage the publication thereof."

In carrying out these functions the Council's area of interest is the Atlantic Ocean and its adjacent seas but the North Atlantic is singled out as a principal area of study.

The Headquarters of the Council are in Copenhagen, Denmark provided through a Host Agreement concluded between the Council and the Government of Denmark. It grants the Council privileges and immunities as are customarily enjoyed by other international organizations.

Membership

Each Contracting Party is allowed to appoint up to two Delegates to the Council and they are expected to act as the chief contacts in their country in all matters with which the Council is concerned. In the absence of a delegate a replacement may be named who assumes all the powers of the delegate for that meeting. Each Contracting Party is also expected to appoint experts and advisors to assist in the work of the Council.

Organization

The elected officers of the Council are the President, the first Vice-President, and four Vice-Presidents, who constitute the Bureau of the Council. The President, First Vice-Chairman, and Vice-Chairmen are elected to office by the delegates for a period of three years and are not eligible

for re-election in the next succeeding term. The President, upon being elected, ceases to be a Delegate and becomes an independent officer of the Council.

Bureau

The Chairman of the Consultative Committee and the General Secretary participate in the Bureau Meetings of the elected officers. The Bureau serves as the Executive Committee of the Council and is responsible for the preparation of the Council's budget, management of the reserve funds and other tasks that may be entrusted to it by the Council.

The General Assembly

The General Assembly is made up of Delegates, expert advisers, observers and other persons who have been authorized to attend the meetings of the Council.

Apart from the officers, delegates, editors and secretariat of the Council, the Council's structure consists of the following:

The Bureau of the Council
The Consultative Committee
The Finance Committee
The Publications Committee
Advisory Committees
Standing Committees

Finance Committee

The Finance Committee is composed of one member of the Bureau, nominated by the President, a Delegate from Denmark, and four other Delegates appointed annually by the Council. The Chairman is elected by the Council. The Finance Committee reviews the audited accounts of the preceding year, the budget for the present and ensuing financial years, and the forecasted budget for the next following year and such other matters as may be referred to it by the Bureau.

Consultative Committee

The Consultative Committee consists of the Chairmen from all Area and Subject Committees and an independent Chairman elected by the Committee from among the Delegates and Experts. The Chairman of this Committee is considered as an officer of the Council and not a Delegate.

The Consultative Committee is the principal scientific policy body of the Council. It maintains an overview of the programmes of research organized or coordinated by the Council including special scientific meetings and collaborative undertakings with other organizations. It is also responsible for advising the Council and the Bureau on all scientific matters emanating from the Area and Subject Committees.

The Publications Committee

The Publications Committee membership consists of the Chairman of the Consultative Committee, the Editor of the Journal du Conseil, four other members appointed by the Council from among the Delegates and experts who may serve for a three year period only, and one of the Council's Vice-Presidents who serves without the right to vote. The Committee is responsible for the review, preparation and issue of all publications of the Council which include the Bulletin Statistique currently at volume 67, the Journal du Conseil (vol. 42), Annales Biologiques (vol. 39), and the annual reports of the Statutory Meetings, entitled Procès-Verbal de la Réunion.

Other publications include identification sheets issued in series as well as oceanographic data lists and inventories. Some of these titles are:

Fiches d'Identification du zooplankton
Fiches d' Identification des Maladies et Parasites des Poissons, Crustacés et Molluscs
Phytoplankton Identification Sheets
Oceanographic Data Lists and Inventories (No. 67)
ICES Information - Newsletter
Cooperative Research Reports (No. 118)

Advisory Committees

ICES has formal advisory links to the Northeast Atlantic Fisheries Commission, the Baltic Sea Fishery Commission, the Oslo and Paris Commissions for the control of pollution, and the Interim Helsinki Commission for the Protection of the Marine Environment of the Baltic Sea Area. The advisory functions are provided by the two Advisory Committees, the Fishery Management and Marine Pollution Advisory Committees.

Other formal and informal Working relationships have been set up with FAO, IOC, UNESCO, SCOR and NAFO in regard to mutual observer status, joint programmes, publications and co-sponsorship of meetings and symposia.

The Advisory Committee on Fishery Management

The Advisory Committee on Fishery Management consists of the Chairman nominated by the Consultative Committee, the Chairmen of such other Committees as the Council decides, and one scientist nominated by each Delegation if they which to participate subject to approval by the Council. The Chairman of the Desmersal Fish Committee the Pelagic Fish Committee and the Baltic Fish Committee usually serve on this Advisory Committee, but the Committee is very much dependent on the expertise available from other fisheries committees.

The Committee is responsible for giving, on behalf of the Council, scientific information and advice to Fisheries Commissions and to Member Governments of the Council on such matters it has been requested to offer advice. It regularly provides advice on stock assessments and total allowable catches to the Northeast Atlantic Fisheries Organization (NEAFO) and when requested to NAFO.

The Advisory Committee on Marine Pollution

The Advisory Committee on Marine Pollution is also made up of appointed members. The principals are a Chairman elected by the Consultative Committee and Chairmen of such committees as may be nominated by the Council and other members coopted for the purpose. Usually the Chairman of the Marine Environmental Quality Committee, the Biological Oceanography Committee and the Hydrography Committee serve on this Committee. Each appointed member serves in their personal capacity to ensure independent judgement of questions referred to it.

Through this Committee ICES also provides the scientific advice to the Oslo Commission which controls ocean dumping activities in western European waters; to the Paris Accord which covers land based discharges and the Helsinki Commission which deals with all aspects of marine pollution in the Baltic. The Committee responds directly to these organizations and does so by assessing their work plans and referring specific questions to the appropriate Committees in ICES which in turn prepare preliminary reports on the subject. The Committee evaluates all relevant information and prepares an annual report for each Commission.

The Standing Committees (Subject/Area Committeees)

The term "Standing Committee" currently in use at ICES includes all the major scientific working committees except the two designated advisory committees. The term now includes what is commonly referred to as the Subject/Area Committees. At the level of the Standing and Subject/Area Committees the representation is scientific and relatively free of bureaucrary and national positions. In this way the reputation and respect of ICES as a leading scientific marine body is preserved.

The Subject/Area committees collectively represent the scientific activities of ICES. Each one has specific terms of reference covering fisheries science, assessments, gear research, statistics, biological and hydrographic (oceanographic) sciences. Committee proceedings are devoted to the presentation and discussion of scientific papers given within the Committees' terms of reference. However an important part of their work is taken up by in-depth studies handled by a very large number of working groups, ad hoc study or planning groups. Such groups usually meet on the occasion of the Statutory Meetings but may also meet intersessionally. Many current scientific advances and innovations are brought to the attention of the Council and Members by "theme symposia sessions" which quite often feature invited experts. In this way the Council has kept at the forefront of marine science thus earning for itself a high reputation for its work.

Representation on Subject/Area Committees is open to all representatives but two from each member State are formally appointed to each Committee for the purposes of voting and serving as as the Subject/Area point of contact. Either one but not both are permitted to vote on the occassion of election of a chairman. The Department is currently represented on all Committees with the exception of the Baltic Committee.

Twelve Subject/Area Committees are active and each basically operates in similar fashion for the presentation of papers, posters and organization of working groups. National subject or area reports are tabled at each Committee in response to issues that are judged to be of general interest.

The Subject/Area and Fisheries Committees are covered in Appendix V. They are grouped for convenience as follows:

Subject/Area Committees:

Fish Capture Committee
Hydrographiy Committee
Marine Environmental Quality Committee
Mariculture Committee
Biological Oceanography Committee

Fisheries Committees:

Desmersal Fish
Pelagic Fish
Baltic Fish
Shellfish
Anadromous
Catadromous Fish
Marine Mammals

The Department and ICES

ICES is viewed by departmental fisheries scientists as the most important international body in marine fisheries research particularly from the point of view of gaining access to work that is being done by scientists in other countires. It is one of the leading fora where stock assessment research is undertaken outside of a fisheries commission. Its work on Atlantic salmon is particularly relevant to the Department's representation on NASCO and Canada's concern on foreign high seas interventions of salmon off Greenland. ICES also provides the only forum where North Atlantic flatfish and North Atlantic herring and capelin stocks are discussed.

With the decline of scientific activities by the European countries in NAFO, ICES has assumed an even more important role in international fisheries and stock assessment research. It is thus imperative for departmental fisheries scientists to remain actively involved and abreast of current European thinking and developments through ICES. The Department, must recognize as well that ICES is also well-recognized as a major international forum for oceanography and marine pollution studies by the work of its committees and association with other international organizations such as SCOR and IOC. As a consequence, there is also high scientific interest by oceanographers in attending ICES meetings not only at the Annual Statutory Meetings but intercessionally at the working group level.

The number of departmental scientists named to ICES bodies is large but the number that actually attend are relatively few. It is a situation

that requires review in the light of the competition amongst regions to be represented at ICES.

The work of ICES is so closely allied to the science functions of this Department that it impacts not only on departmental scientists, but the Regions and the Department itself. It is obvious that, if the Department is to take full advantage of ICES, there is a clear need to ennuciate a national policy in regard to ICES in recognition of the fact that it is not simply a "scientific conference organization" but rather one that deals with issues of vital concern to the core and science functions of the Department.

CONVENTION ON FUTURE MULTILATERAL COOPERATION IN THE NORTHWEST ATLANTIC FISHERIES ORGANIZATION

CONVENTION ON FUTURE MULTILATERAL COOPERATION IN THE NORTHWEST ATLANTIC FISHERIES
(NAFO)

The Northwest Atlantic Fisheries Ogranization (NAFO) was established in 1979 following Canada's extension of fisheries jurisdiction to the 200 nautical mile limit. The Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries replaced the former International Convention for the Northwest Atlantic Fisheries (ICNAF) which had served as the basis of managing the East coast fisheries since 1950. The NAFO treaty was one of the first major multilateral fisheries treaties signed after the conclusion of the Third United Nations Conference on the Law of the Sea.

Purpose

The purpose of the Convention is to promote the conservation and optimum utilization of the fishery resources of the Northwest Atlantic area in accordance with the regime of extended coastal state jurisdiction over fisheries and to encourage international cooperation and consultation with respect to these resources.

Convention Area:

The area to which the Convention applies are the waters of the Northwest Atlantic Ocean north of 35°00' north latitude and west of a line extending due north from 35°00' north latitude and 42°00' west longitude to 59°00' north latitude thence due west to 44°00' west longitude and thence due north to the coast of Greenland, and the waters of the Gulf of St. Lawrence, Davis Strait and Baffin Bay south of 78°10' north latitude.

The Regulatory Area of the Convention:

"The Regulatory Area" of the Convention Area lies beyond the areas in which coastal States exercise fisheries jurisdiction.

Application

The Convention applies to all fishery resources of the Convention Area except salmon, tunas and marlins, cetecean stocks and sedentary species of the Continental Shelf.

Organization

The inaugural meeting of NAFO took place in March, 1979 at which time the principal bodies of the organization and the standing committees were established. The basic organizational framework of NAFO consists of the General Council with a Standing Committee on Finance and Administration; the Fisheries Commission with a Standing Committee on International Control and the Scientific Council which is supported by the following three Standing Committees:

Standing Committee on Fisheries Science (STACFIS)
Standing Committee on Research Coordination (STACREC)
Standing Committee on Publications (STACPUB)

The General Council:

The General Council is responsible for the organizational, administrative and financial functions including relations amongst its own bodies and those external to the Organization. Each Contracting Party is a member of the General Council and can be represented by not more than three persons who may be accompanied by alternates, experts and advisors. The General Council elects a Chairman and a Vice-Chairman, each of whom serves for a term of two years and are eligible for re-election for one additional term. The Chairman, however, must be a representative of a Contracting Party that is a member of the Fisheries Commission.

The Fisheries Commission

The Fisheries Commission is responsible for the management and conservation of the fishery resources of the Regulatory Area. It must take into account the scientific advice of the Scientific Council and maintain a balanced and consistent approach in managing the fisheries stocks, in areas under the fisheries jurisdiction of Canada, Greenland and the United States and in the Regulatory Area. Allocation of catches in the Regulatory Area must reflect traditional fishing rights and the rights of the coastal state whose fishing communities are dependent on stocks that are related to the resources in the Regulatory Area. To maintain this balance the Convention provides for inspection of the international fisheries in the Regulatory Area.

Membership on the Fisheries Commission is determined by the General Council based essentially on the evidence that a Contracting Party expects to participate in the fisheries of the Regulatory Area during the year of an annual meeting or the following calendar year. Each Commission member may be represented by three individuals and can be accompanied by alternates, experts and advisors. Contracting Parties who are not members of the Commission have observer status. The Chairman and the Vice-Chairman are elected and serve their terms on the same basis as the General and Scientific Councils.

For the purposes of managing the stocks the Convention area is divided into scientific and statistical sub-areas divisions and sub-divisions. The boundaries of which can be modified by vote and agreement of the coastal state affected.

The Scientific Council:

Each Contracting Party is a member of the Scientific Council and may appoint its own representatives including alternates, experts and advisors. The Council elects its own Chairman and Vice-Chairman who serve for a term of two years and are eligible for re-election. The Council is empowered to establish Committees and Sub-committees as it considers necessary.

The Council works by consensus, and in providing scientific advice this practice is followed, however, when consensus has not been achieved then a full report must be submitted to the Fisheries Commission containing all the views advanced.

The Scientific Council provides the principal mechanism for the formal study, appraisal and exchange of scientific information relating to the fisheries of the Convention Area including the environmental and ecological factors affecting the fisheries. Contracting Parties assit by furnishing statistical and scientific information as may be requested by the Council. If advice is sought on a particular stock the State or States calling for such a study do so in consultation with the Scientific Council and they are entitled to specify the terms of reference for such a study. The call for such studies is usually made for stocks that are identified as surplus to a coastal state's needs, and which may or may not straddle the coastal states fisheries jurisdiction or lie within the Regulatory Area of the Convention.

In responding to requests placed before it either by State or the Fisheries Commission, the Council may request assistance from Contracting Parties for scientific research or turn to other organizations as appropriate for assistance. The work of the Scientific Council is thus considerable in that it may have to deal with the annual assessment of most if not all the stocks by sub-areas and divisions.

The Scientific Council is assisted in its work by three Standing Committees. The Standing Committee on Fisheries Science (STACFIS), the Scientific Standing Committee on Research Coordination (STACREC) and the Standing Committee on Publications (STACPUB). The three Standing Committees normally meet prior to a regular meeting but may also meet intersessionnally.

The Standing Committee on Fishery Science (STACFIS)

STACFIS is the principal body within NAFO that undertakes the review and assessment of fish stocks through the evaluation of reports submitted to it by the scientific representatives of the Parties. Within the continuum of the assessments numerous subjects are reviewed and some are brought forward as major undertakings to be addressed at ad hoc working groups, workshops or symposia to gain a better understanding of the biology or interrelationships of the species in question. The requirements for STACFIS assessments by the Parties include a review of relevant research documents and other quite specific information laid out in a standard format to assure consistency of presentation, data and comparability. The main features of this reporting system are:

Description of the Fishery

Qualitative review of the fishery activity in the most recent years.

Input Data

The survey design, sampling methods, groupings, the years and weighting factors used.

Estimation of Parameters

The models employed together with the data.

Assessment Results

The detailed results of assessment calculations.

Catch Projections and Prognosis

Relevant conclusions, projections and general prognoses.

The general function of the Scientific Council and its Standing Committees are to review and assess a wide range of scientific activities and initiate studies on behalf of its Members. It works in close association with other organizations such as ICES, NEAFO, and FAO to ensure compatibility of statistics and methodology as well as in promoting collaborative studies and investigations.

The Standing Committee on Research Coordination (STACREC)

The Scientific Council at its inaugural meeting agreed to establish a Standing Committee on Research Coordination which in effect assumed the previous responsibilities of the Standing Committee on Research (STACREC) of ICNAF. Its terms of reference include coordination of environmental research studies, statistics and sampling, ageing techniques and validation of gear and selectivity. The environmental research functions are handled by a Subcommittee on Environmental Research which provides an annual overview of general oceanographic conditions through an examination of time-series of data sets on ocean and atmospheric conditions. Several other functions of STACREC include (i) statistics, sampling techniques and data bases; (ii) coordination of biological surveys; and (iii) gear and tagging studies and (iv) the NAFO Scientific Observer Scheme.

Statistics and sampling are two very fundamental functions of this Committee in respect to standardization of methodologies and databases for all member States. It also maintains an inventory of tagging events, assessments and comparisons of sampling gear.

A NAFO Scientific Observer Scheme was recently instituted to obtain more timely and reliable information on catch statistics and sampling than heretofore. The programme also serves as a form of surveillance on fishing operations.

The Standing Committee on Publications (STACPUB)

At its first annual meeting the Standing Committee on Publications (STACPUB) reviewed the policies and publications of ICNAF in regard to the continuation of publication, numbering of issues and format. Decisions were made to continue with the publication of primary and secondary journals, the Statistical Bulletin, Yearbook, and the Scientific Council Reports.

Primary Scientific Journal

The primary scientific journal of NAFO is entitled the NAFO "Journal of Northwest Atlantic Fishery Science" which in effect is the successor to the ICNAF Research Bulletin. The Journal is regional in

scope and publishes papers on Northwest Atlantic fisheries science of general applicability. Methodological and review papers from other areas may be accepted if judged relevant to NAFO affairs. The policy of the Journal is to encourage papers of an environmental, and biological nature as well as definative studies on the fisheries and their ecosystems. The Journal is managed through an Editorial Board consisting of the Editor and four Associate Editors.

Secondary Scientific Publication

The secondary scientific publication entitled the NAFO Scientific Council "Studies" is a continuation of the ICNAF Selected Papers Series. It provides a medium of publication of papers of topical interest and importance to the current and future activities of the Council and its Standing Committees. Manuals, contributions to special meetings and symposia are published in this series, but the papers are not referred.

The Statistical Bulletin and Sampling Yearbook of NAFO continue the series from ICNAF beginning with the NAFO Statistical Bulletin of Vol 29. All previous issues carry the ICNAF title "Statistical Bulletin". The first Sampling Yearbook of NAFO is Vol. 24 issued in 1980, it continues the ICNAF series entitled the ICNAF Sampling Yearbook.

As one means of focussing attention on topics of interest, NAFO regularly organizes fisheries scientific sessions in the form of workshops or symposia which attract scientists and fisheries managers from NAFO Members and other Organizations. A few of the relevant sessions held in recent years are:

Larval Herring Studies in the Gulf of Maine - Georges Bank Area 1970-1979;
Squid Biology and Distribution;
Remote Sensing Methods and their Possible Applications to Fisheries Science;
Shrimp and Seal Assessments;
Assessments of Cod and Capelin;
Review of Status of Shrimp Stocks;
Review of Status of Harp and Hooded Seals;
Design and Evaluation of Biological Surveys in Relation to Stock Assessments;
Biology and Ecology of Squids;
Trophic Relationships in Marine Species Relevant to Fisheries Management in the Northwest Atlantic;
Evaluation of the Flemish Cap Research Programme.

The Department and NAFO

NAFO scientific functions are very much dominated by the Department. Less scientific input is being provided by other countries as a result of Canadian extension of jurisdiction and declines in allocations to foreign fishermen. Canada remains as the principal researching State with only the USSR playing a significant role out of all the other Members.

The effect of the above is the loss of a strong peer review process and an effective interchange of views and discussion on stock assessment methodologies which are fundamental to the continued success of NAFO. Access to the stocks in the Regulatory Area and the straddling stocks will maintain some momentum and interest in research studies, but if the economic return drops significantly it is most likely that the foreign interest in NAFO will wane.

On the other hand, there has been considerable success achieved in organizing advanced symposiums and workshops on fundamental fisheries and biological problems which have balanced the lack of participation in NAFO stock assessment studies. If this trend continues it is cause for concern for the Department if it finds itself isolated and in the position of peer reviewing its own stock assessment science. NAFO unlike ICES has no scientific capability of its own and to be successful scientifically one or another country will have to provide the leadership. The two most obvious countries are Canada and the USA. They together could provide the leadership and use this multilateral agreement for more effective fisheries discussions than bilateral arrangements.

THE INTERNATIONAL CONVENTION FOR THE CONSERVATION OF ATLANTIC TUNAS

THE INTERNATIONAL CONVENTION FOR THE CONSERVATION OF ATLANTIC TUNAS
(ICATT)

The International Convention for the Conservation of Atlantic Tunas (ICATT), came into force March 21, 1969 when the tenth country, Spain ratified the Treaty. Since that date an additional 12 countries are either adherring or have ratified the Agreement.

Purpose

The purpose of the Convention is to maintain the populations of the Atlantic tunas and tuna-like fish at levels which will permit the maximum sustainable catch for food and other purposes.

Convention Area

The Convention area covers all the waters of the Atlantic Ocean including its adjacent Seas.

Agreement with FAO

The Convention allows for formal agreements to be drawn up with other organizations and FAO approved such an agreement in 1973. This Agreement embodies the basic formalities of coordination of effort, mutual assistance and joint action but more importantly it allows for the sharing and exchange of data on the collection and analysis of statistics, stock assesment information and the formulation of conservation and management measures relating to tunas and tuna-like fishes.

Organization

The organization consists of a Commission known as the International Commission for the Conservation of Atlantic Tunas, and a Council supported by Standing Committees on Research and Statistics, Finance and Administration, and four panels responsible for the management of the tunas. Working groups may be set up by any of the major bodies to undertake specific tasks.

Representation

Each Contracting Party is formally represented on the Commission with not more than three Delegates who can be accompanied by experts and advisors. A Council is appointed by the Commission consisting of the Chairman and the Vice-Chairman together with representatives of not less than four and not more than eight Contracting Parties. The Commission meets every two years and the Council intercessionally. As it turns out the Council has not met for several years, being replaced by a special meeting of the full Commission.

Panels

The Commission organizes its work on the management of the stocks through four panels established on the basis of groups of species and geographic areas.

The four panels are:

Panel 1. Tropical Tunas
Panel 2. Temperate Tunas, North
Panel 3. Temperate Tunas, South
Panel 4. Other Species

Membership on a Panel is determined by a member Country which so informs the Commission. Canada is a member of Panels 2 and 4.

Standing Committee on Research and Statistics

Each member Country is entitled to be represented on this Committee whose prime functions are to identify the necessary research required for the assessment of abundance, biometry and ecology of the tuna fishes, the oceanography of their environment and the effects of natural and human factors upon their abundance. In order to provide such information the Commission relies upon the technical and scientific capabilities of the Parties and may draw upon other organizations to provide relevant information or statistics as appropriate.

Members table and discuss their research findings and recommendations at the Committees sessions reviewing as well the studies undertaken by its Working Groups. In effect the Committee peer reviews all reports and proposals on the effectiveness of conservation measures, and trends in the fishery as evidenced by catch statistics. It is on the basis of these findings that stock quotas are received by the four management panels for the Commission. Canada's interest is on bluefin tuna and swordfish.

Publications

A biennial report is issued in annual parts which include the Proceedings of the Commission or Council, reports of the meetings of the Panels, Standing Committees on Research and Statistics and Finance and Administration.

Recommendations for regulations are included as appropriate in these reports but they also contain the findings of working groups, workshops, and the national reports from member Countries. A Statistical Bulletin is issued annually with a Historical Statistical Bulletin being published every ten years. A Collective Volume of Scientific Papers is published one or more times a year with the purpose of preserving and disseminating the technical papers presented at the sessions of the Standing Committee on Research and Statistics. A Data Record is published about twice a year containing data received from national offices on catch and effort data and size frequency data.

The Department and ICCAT

Despite the fact Canada's annual catch of tuna is less than 1000 tons (300 out of an allocation of 750 tons in 1985). The bluefin tuna fishery is quite valuable in Atlantic Canada with some 700 Canadian fishing vessels licenced. The fishery occurs in the Gulf of St. Lawrence and along the Atlantic coast serving a market in the USA and Japan. The department

maintains a relatively modest assessment programme which is handled by the Gulf Region. The Canadian swordfish fishery is subject to some uncertainty with regard to landings since much of the catch is transferred at sea to US vessels. Therefore, the reported catch is likely to be considerably underestimated.

The Commission serves as a good example of international willingness to manage an ocean ranging resource which could not be undertaken without some form of international collaboration. Thus Canada as a small contributor to the Commission's work gains much in return from the research and studies by other member Countries. The Commission maintains a close liaison with other international bodies; FAO through a formal agreement and informally with many others; two of which are of direct concern to Canada namely the Northwest Atlantic Fisheries Organization (NAFO) and the International Council for the Exploration of the Sea (ICES).

Canada's participation in ICCAT not only fulfills a requirement for managing the tunas, but it serves as another fora for promoting Canadian research, and management expertise. There appears to be few political problems in the Commission, but there are sensitivities to the strict imposition of western Atlantic bluefin tuna regulations which has brought about increased fishing pressure from the Japanese in the eastern Atlantic area where France and Spain are the two major tuna fishery countries.

The Department's most obvious weakness in ICCAT is the lack of attention being paid to swordfish despite the fact it is being overfished and not well-managed. Data are lacking, brought about in part by health regulations on mercury contamination which is believed to be the reason for unreported transhipments of swordfish catches to U.S. boats.

CONVENTION FOR THE CONSERVATION OF SALMON IN THE NORTH ATLANTIC OCEAN

CONVENTION FOR THE CONSERVATION OF SALMON IN THE NORTH ATLANTIC OCEAN
(NASCO)

The North Atlantic Salmon Conservation Organization was established in 1983 following the ratification of the sixth Party. The ratifying Parties are Canada, and Denmark in respect to the Faroe Islands, the European Economic Community, Ireland, Norway and the United States. Sweden ratified in 1984 and Finland has acceded to it. The headquarters of the Organization is Edinburgh, Scotland.

Purpose

The purpose of the Convention is to promote the conservation, restoration, enhancement and national management of salmon stocks in the North Atlantic Ocean.

Convention Area

The Convention applies to the salmon stocks which migrate beyond areas of fisheries jurisdiction of coastal States of the Atlantic Ocean north of 36°N latitude. The Convention prohibits fishing of salmon beyond areas of fisheries jurisdiction and as well areas of fisheries jurisdiction of coastal states beyond 12 nautical miles from baselines except for:

a) in the West Greenland Commission area up to 40 nautical miles from the baseline; and
b) in the Northeast Atlantic Commission area, within the area of fisheries jurisdiction of the Faroe Islands.

Organization

The Organization consists of a Council and three regional Commissions: a North American Commission, a West Greenland Commission and a Northeast Atlantic Commission.

Each Party is a member of the Council and may appoint not more than three representatives who may be accompanied at its meetings by experts and advisors. The Council elects from different Parties a President and Vice-President who can serve for two years. They are eligible for re-election but cannot serve for more than two terms in succession.

The functions of the Council are basically to provide a forum for the study, analysis and exchange of information on all matters concerning salmon and to establish working arrangmeents with ICES and other scientific organizations. It is responsible for the administrative, financial, internal affairs and external relations of the Organization.

All parties are required to provide the Council with catch statistics for salmon stocks taken in rivers and within their fisheries jurisdiction along with copies of laws, regulations and programmes relating to the conservation, restoration, enhancement and management of stocks as covered by the Convention.

The Council has the authority to make recommendations to the Parties and Commission on matters concerning salmon stocks including the enforcement of laws and regulations. However, no recommendations can be made concerning the management of salmon harvest within areas of jurisdiction of a Party.

The North American Commission areas are the maritime waters within areas of fisheries jurisdiction of Canada and the United States. The West Greenland Commission areas are the area of fisheries jurisdiction off the West Greenland coast west of a line drawn along 44°W longitude south to 59°N latitude then east to 42°W longitute and then due south. This boundary is the same as the NAFO Convention boundary. The Northeast Atlantic Commission areas are the maritime waters east of the line defined for the West Greenland Commission.

All the Commissions are expected to employ the best scientific advice available and take into account the efforts of States to manage and improve their stocks of salmon. Each Party may participate in the deliberations of a Commission of which they are not members.

Not more than three representataives can be appointed to a Commission and they may be accompanied at meetings by experts and advisors. Each Commission elects a Chairman and Vice-Chairman and their terms of office and reelection are governed by the same rules as for the principal elected officers of the Council.

North American Commission

The North American Commission Members are Canada and the United States and under its terms of reference it provides a forum for consultation and cooperation on:

a) "matters related to minimizing catches in the area of fisheries jurisdiction of one member of salmon originating in the rivers of another Party; and
b) cases where activities undertaken or proposed by one member affect salmon originating in the rivers of the other member.

The Commission can propose various regulatory measures for salmon fisheries and recommendations concerning scientific research, however neither Party may alter its fishing patterns to the detriment of the other without first gaining consent.

The West Greenland and East Greenland Commission

The West Greenland Commission includes Canada, the EEC and the USA. Its terms of reference are not as specific as those of the North American Commission, but they cover the need for consultation and cooperation on the conservation, restoration, enhancement and management of salmon stocks and provide a means for proposing regulatory measures and recommendations for the conduct of scientific research.

The Department and NASCO

NASCO began its operations in 1984 and during the year it established itself and held its first inaugural meetings of the Council and Commissions. A number of important steps were taken in that all three of the regional Commissions defined the key scientific questions and needs concerning their respective salmon resources. Departmental scientists were thus able to influence the formulation of questions, for the two Commissions which Canada is represented on, for study by ICES.

What is very important to the Department is that NASCO provides an opening for dialogue between Canada and the US to start the process of achieving better management of North American salmon stocks. The Parties have also agreed to look at the question of acid rain and its affects on stocks of Atlantic salmon. Following discussions on on a question of stocking of the Great Lakes and Atlantic seaboard with Pacific salmonids the Commission will set up a joint Canada-USA working group on the subject.

The Canadian Atlantic Salmon Management Plan was reviewed and endorsed by the North American Commission. Essentially the Plan calls for substantial cutbacks in all sectors of the fishery by sharing the responsibility over all user groups. The United States has agreed to work with Canada on the Plan in an attempt to resolve some of the difficulties it has identified in respect to minimizing the interceptions of salmon of US origin off Newfoundland and Labrador.

The fact that NASCO has basically turned to ICES for the provision of scientific advice requires that Canada maintains a strong scientific representation at NASCO for definition of the scientific questions and as well at ICES where the questions are considered. Already some success has been achieved in that the salmon catch in the West Greenland area has been reduced which translates into fewer interceptions of Canadian salmon.

The Convention is an important one for Canada in that a good deal of public emotion is attached to the survival of Atlantic salmon since it is highly prized and valued as a food, and contributes so significantly to the sport and recreational industry in Atlantic Canada.

INTERNATIONAL CONVENTION FOR THE HIGH SEAS FISHERIES OF THE NORTH PACIFIC OCEAN

INTERNATIONAL CONVENTION FOR THE HIGH SEAS FISHERIES OF THE NORTH PACIFIC OCEAN

The International Convention for the High Seas Fisheries of the North Pacific was brought into force in 1953 with the exchange of ratifications of Canada, Japan and the United States.

Purpose

The purpose of the Convention is to ensure that the fishery resources of the Convention area are maintained at the level of maximum sustained productivity of the fishery resources of the North Pacific Ocean. The area to which the Convention applies are the waters of the North Pacific Ocean other than territorial waters.

Commission

The Convention established an International North Pacific Fisheries Commission composed of three national sections of four members each. The officers of the Commission, Vice-Chairman and Secretary are selected from each respective section and serve for one year, after which the positions are filled by another section in order to ensure each section with a representation in all positions.

Each Contracting Party is allowed to establish an Advisory Committee and they are permitted to attend all sessions unless otherwise designated. The Commission may hold public hearings and each national section may also hold public hearings within its own country.

Functions of the Commission

The Convention recognizes that certain stocks of salmon, halibut and herring are not to be fished by all Parties. The stocks that cannot be fished are identified in an Annex as well as the Parties that are restrained from the fishery. The Annex is subject to continuing study by the Commission as laid out in the Treaty for the purpose of determining annually whether the stocks in question still qualify for abstention. If additional stocks are proposed to be added to the Annex by one or more of the Contracting Parties, the Commission is required to determine whether such stocks qualify for abstention, and if so it must recommend the conditions that are to be followed by the Parties. The Commission may also be asked to study any other stock of fish which is under substantial exploitation by two or more of the Contracting Parties to determine the need for joint conservation measures.

The Commission can request information from each Party regarding its own conservation measures, and can compile and study the records provided by the Contracting Parties. It is required to submit annually to each Contracting Party a report on its operations and other relevant observations.

The Convention has been drafted in such a way that the any requirement for protecting a fishery stock must be substantiated by scientific research and evidence whether the fishery in question is to be added or deleted from

the Annex. Thus any stock of fish specified in the Annex requires that the Parties who are not fishing such stocks must continue to abstain from fishing. On the other hand for those Parties that do participate in the fishery they must continue to carry out the necessary conservation measures and scientific research.

A very important Protocol to the Convention was signed in 1952 concerning an abstention of fishing by the Japanese on the high seas of salmon originating in Canada and the United States. The protocol called for an extensive investigation of Convention waters to ascertain, where if any, salmon orginating in Canada and the United States were intermingling with salmon originating in the rivers of Asia. On the basis of the studies carried out a line of demarcation was established for the purposes of distinguishing the stocks and hence of the fishing rights of each Party.

Scientific Studies

The Commission has established the Standing Committee on Biology and Research made up of a Commissioner member, Commissioner-adviser, scientific members and advisers from all countries. The Committee has organized its work under a number sub-committees, namely;

The Sub-Committee on Salmon
The Sub-Committee on Non-Anadromous Species
The Sub-Committee on King and Tanner Crab

It is through these sub-committees that the research capabilities of Canada, Japan and the United States have effectively been brought together for the study of the critical aspects of the management and conservation of the North Pacific fisheries.

In 1978 the Convention was amended and in effect assured the continuation of the Commission and broadened its scope to consider species other than anadromous fish. The Commission now with its enlarged mandate serves a very important scientific function for the North Pacific in that it encourages the exchange of scientific information and sponsors through the Parties, workshops, joint surveys, and scientific symposia on the marine resources and oceanography of the North Pacific Ocean. Participation at the INPFC meetings and at the scientific workshops and symposia include scientists and contributors from many other countries besides the three Parties of this Convention.

Publications

The Commission issues a number of publications namely an Annual Report of which 30 have been printed along with a Statistical Yearbook and an extensive number of Bulletins covering the research findings of the Commission's programmes.

The Department and INPFC

Canada's research input to INPFC is provided by the Pacific Biological Station of the Department. Over the years this work has absorbed a considerable portion of their total research effort, the highest priority

having been given to Pacific Salmon. Its research has addressed questions on the distribution, continent of origin, migration, ocean survivability and productivity of salmon. Of the non-anadromous species research studies include work on groundfish, sablefish, dogfish and pollock.

The International North Pacific Fisheries Convention was one of the most significant and far-reaching fisheries treaties signed by Canada in 1953 in that it provided total protection for Canadian West Coast salmon through the principle of abstention and boundary demarcation lines which exist to this day. The only unresolved issues are the interceptions of Steelhead on the high seas and Chinook salmon originating from the Yukon River.

It is still essential for Canada to participate in INPFC even though the science issues related to the anadromous species are less important today than they were originally. However, the importance of the non-anadromous species has increased and as a result it has lead to a re-assessment of Article IV of the Convention which calls upon the Contracting Parties to work towards the establishment of an international organization with an enlarged membership to deal with species of the Convention area other then anadromous species.

At present INPFC offers the only forum for scientific discussion of the fisheries and oceanography of the North Pacific and it is being used as a means of considering other issues such as the relationship of ocean variability on the fisheries of the North Pacific. Without representation from other countries its role is limited.

Consideration of Article IV includes the possibility of establishing a body that could provide scientific advisory functions or one with very broad scientific terms of reference. One of the key concerns to be considered, however, is whether or not such a body should handle catch statistics and related information for the fisheries of the North Pacific.

There appears to be considerable support for a separate scientific body from the US side, but the Canadian position is still undecided, however there is growing support on the west Coast for the concept. The Japanese are somewhat uncertain and sensitive to Soviet participation for fear of opening the door to Soviet entry into INPFC. However, given all the uncertainties, the fact remains that no mechanism exists for the exchange of data and information with countries outside of INPFC. From the scientific point of view the need for such a new body is apparent.

If INPFC changes its character in the coming years, it will still have to be strongly supported and attended by Canadian scientists to maintain the interests of Canada.

CONVENTIONS ON WHALES, SEALS, AND ENDANGERED SPECIES

THE INTERNATIONAL CONVENTION FOR THE REGULATION OF WHALING, 1946
(IWC)

The International Convention for the Regulation of Whaling (the Whaling Convention) came into force in 1948 superceding an earlier Convention for the Regulation of Whaling concluded in 1931 which went some way in controlling the worst of the whaling practices, but it only prohibited the commercial hunting of right and bowhead whales. It had limited practical value in that the major whaling States refused to accede it. The new Convention has remained in force and is the principal vehicle overseeing the world's whaling activities.

Purpose

The purpose of the Convention is twofold in that it identifies conservation objectives on the one hand and an orderly development of the whaling industry on the other hand. The regulations governing the protection and exploitation of whales are contained in a Schedule to the Convention.

Adhering Parties

There are thirty-nine states adhering to the Whaling Convention the vast majority of whom are not whaling States.

Scope of the Convention

The Convention covers factory ships, land stations and whale catchers under the jurisdiction of Parties to the Convention. It applies to all waters in which whaling is carried out including territorial seas and inland waterways. In this respect it embraces a much wider geographical area than most international fisheries agreements.

The Convention however, refers to whales without definition and as a consequence its jurisdiction over small whales, dolphins and porpoises has been challenged. As a result its right to control the take of small whales is a serious issue in that large numbers of small cetaceans are killed each year either directly from exploitation or incidentally from fishing operations. A step in asserting its jurisdiction over "small type whaling operations" was taken in 1976 when Parties were required to submit data on minke, bottlenose, beaked, pilot and killer whales. Although there still remains a significant gap in regulating the direct and indirect taking of small cetaceans, the steps taken do broaden the scope of the Convention from its traditional regulations on large baleen and toothed whales.

Organization

The Whaling convention established an International Whaling Commission composed of one voting representative of each Party who may be accompanied by experts and advisers. The Convention itself makes no provision for observers to IWC meetings but the IWC's Rules of Procedure allow non-Parties and intergovernmental organizations to be represented as observers if they have previously attended meetings or have submitted a

written request for attendance to the Secretary 30 days prior to a meeting. Non-governmental international organizations with offices in more than three countries may also attend.

These arrangements normally do not apply to other "Wildlife Treaties" but the fact that the IWC will allow representatives of both the whaling industry and conservation organizations to lobby attracts widespread public interest.

Committees

The International Whaling Commission is authorized to establish such committees as it requires to perform its functions. To date three permanent committees: Finance and Administration, Scientific, and Technical have been set up plus a number of ad hoc committees.

The Scientific Committee

The Scientific Committee is open to representatives from all Parties and invited specialists who may participate as observers on the basis of establishing "observer status" as described. The Committee is responsible for studying information and data in respect to whale stocks and whaling and for making appropriate recommendations to the IWC on quotas.

It plays a key scientific role under New Management Procedures where each species is divided up, in some cases to as many as twenty different stocks. Each stock is classified as an "initial management stock", a "sustained management stock" or a "protection stock" depending upon the relationships between the population level of the stock and the level of its "maximum sustainable yield". Commercial harvesting of "protection stocks" is prohibited and exploitation of stocks in the other two categories must be sustainable.

The Technical Committee

Representation on the Technical Committee is also open to representatives from all Parties and invited specialists. It is responsible for advising the IWC on non-scientific matters such as aboriginal whaling and methods of whaling. In addition to the above the Committee provides a useful forum in obtaining views or positions on proposed amendments to the Schedule since a simple majority is all that is required in Committee whereas at plenary a three quarters majority vote is required for adoption.

Provisions of the Whaling Convention

1. Research

The Whaling Convention authorizes the IWC to:

a) "encourage, recommend, or if necessary, organize studies and investigations relating to whales and whaling;
b) collect and analyse statistical information concerning the current condition and trend of the whale stocks and the effects of whaling activities thereon;

c) study, appraise, and disseminate information concerning methods of maintaining and increasing the populations of whale stocks."

These functions may be carried out independently or in collaboration with the private sector, government or public organizations.

2. The Schedule

The Schedule contains the detailed regulations governing the protection and exploitation of whales. The IWC has the power to amend the Schedule in order to fix:

a) "protected and unprotected species;
b) open and closed seasons;
c) open and closed waters, including the designation of sanctuary areas;
d) the size limits for each species;
e) time, methods and intensity of whaling (including the maximum catch of whales to be taken in any one season;
f) types and specifications of gear, apparatus and appliances which may be used;
g) methods of measurement; and
h) catch returns and other statistical and biological records."

There are two ways by which the IWC enforces its regulation, the first and strongest is by way of an amendment to regulations and the second is by recommendation. Any party may object to an amendment by registering its objection within 90 days of notification of its adoption. If such action is taken by one Party, other Parties have an additional 120 day period to withdraw their previously registered approval of the amendment. Once these two periods have lapsed a Party may not subsequently register an objection.

The objection procedure has impacted on the effectiveness of the International Whaling Commission on several occasions and the latest is the IWC decision to bring about at least a temporary ban on commercial whaling from 1986 onwards. Japan, Norway and the USSR, the three largest whaling States, have registered objections. However, Brazil, Iceland, the Republic of Korea, Peru and Spain are also whaling Nations which have accepted the IWC decision.

The IWC is authorized to make recommendations to any or all contracting Governments on matters which relate to whales or whaling falling within the purposes of the Convention. Such recommendations do not have the same legal force as an amendment to the Schedule, but nevertheless have been effective in controlling some aspects of whaling and protection of stocks.

Enforcement

The enforcement provisions of the Whaling Convention and the Schedule together with domestic measures have proved effective in supporting the principles of the IWC. The Convention and Schedule have led to the establishment of a system of national enforcement with international supervision. Some Parties have gone further by legislative action imposing national controls on citizens and vessels to prevent them from participating or assisting whaling operations. The United States has

passed two bills that authorize the U.S. government to take economic sanctions against any State whose activities diminish the effectiveness of the conservation measures of the IWC. Of the steps taken nationally, that of the United States has the most impact internationally in forcing States to comply with the Convention.

The EEC has also taken steps by adopting measures to ban imports of whale products for commercial purposes. The EEC requires an import licence for any non-commercial imports and is binding on all member States of the EEC.

Other Related Conventions

The Convention on International Trade in Endangered Species of Wild Fauna and Flora

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regulates international trade of any endangered species. So classified are whales (sperm, fin, sei, blue, humpback, bowhead, right, Bryd's, grey and bottlenose) Under the terms of this Convention any specimen taken on the high seas and brought into a State which is a Party to the Convention is considered to be international trade and requires a CITES permit. From January 1, 1986 all cetaceans whose catch is regulated by the IWC will be added to the list.

The Convention on the Conservation of Antarctic Marine Living Resources

This Convention came into force in April 1982 and regulates the exploitation of marine living resources, notably krill which is the principal food supply of several species of baleen whales. Recognizing the close link between baleen whales and krill, this Convention requires its Commission to develop a cooperative working relationship with the IWC.

The Law of the Sea Convention (1982)

The implication of one article (Article 65) of the Law of the Sea Convention implies that whether or not States are Parties to the Whaling Convention they must abide by the Convention. In particular, States which are not Parties to the Convention will have to stop the practice of allowing their national flag to be flown by "pirate" whalers. The term "pirate whaling" applies to the situation where a non-Party allows party States to the Convention to fly the flag of a non-Party as a flag of convenience in order to escape IWC controls.

The Department and the IWC

Canada withdrew from the IWC in 1982 for several reasons. Canada has steadfastly maintained the position that harvesting of any marine species must be done on the basis of the best scientific advice available. In the case of the IWC moratorium on sperm whale hunting, it was not substantiated by scientific evidence and Canada voted against the moratorium. The government was severely criticized in the press for this action despite a public commitment made at that time to continue work on protecting and conserving whale stocks. At the heart of the issue is Canada's strong

stand on managing any fisheries resource on the basis of the best available scientific advice.

Despite the bad publicity received at the hands of the "conservationists" Canada continues to cooperate with the IWC Scientific Committee and regularly provides data and information on whale stocks in Canada's area of jurisdiction.

The matter of Canada rejoining the IWC has come from another source namely the western Arctic Inuit who have argued the right to take bowhead whale as Alaskan natives are permitted to do so. Even if one whale was permitted to be taken as a symbolic gesture it would put at risk Canada's jurisdiction and management of beluga and narwhal over that of the IWC. The situation is one in which the Department must be seen as the manager of whale stocks to offset any move by the "conservationists" to rejoin the IWC and have it manage these resources.

SEALING TREATIES

SEALING TREATIES

Commercial sealing has been a long standing enterprise dating back to the late eighteenth century. It reached such a peak in the late nineteenth century that by the 1900's many of the world's seal populations had been depleted with some on the verge of extinction. The need for international action was obvious since most seals occurred outside areas of national jurisdiction or migrated from one States' jurisdiction to another. International cooperation to limit exploitation led to a number of sealing treaties concluded at or about the turn of the century. The relevant treaties are:

1. The Interim Convention on the Conservation of North Pacific Fur Seals;
2. The Agreement on Sealing and the Conservation of Seal Stocks in the Northwest Atlantic; and
3. The Agreement on Measures to Regulate Sealing and to Protect Seal Stocks in the Northeastern Part of the Atlantic Ocean;
4. The Convention for the Conservation of Antarctic Seals.

The above treaties are concerned exclusively with seals but other treaties govern the conservation and exploitation of seals in other ways. The Convention on International Trade in Endangered Species of Wild Fauna and Flora, prohibits international commercial trade of some seals; the Convention Concerning the Protection of the World Cultural and Natural Heritage, the Convention on the Conservation of European Wildlife and Natural Habitats and the Convention on the Conservation of Migrating Species of Wild Animals all have protection measures of one kind or another for various seal breeding grounds.

The two treaties governing the conservation of seals that Canada is a signatory State are: "The Interim Convention on the Conservation of North Pacific Seals" and "The Agreement on Sealing and the Conservation of Seal Stocks in the Northwest Atlantic".

The Agreement on Measures to Regulate Sealing and to Protect Seal Stocks in the Northeastern Part of the Atlantic Ocean is included in this section because it is discussed at ICES and scientific advice is available from departmental personnel. The Treaty is now subsumed in a more broadly based fisheries agreement between Norway and the USSR.

THE INTERIM CONVENTION ON THE CONSERVATION OF NORTH PACIFIC FUR SEALS

THE INTERIM CONVENTION ON THE CONSERVATION OF NORTH PACIFIC FUR SEALS

The first formal sealing treaty was concluded in 1891 between Great Britain on behalf of Canada and the USA to limit the exploitation of North Pacific fur seals. Unfortunately, it lasted only a year as were the fates of other bilaterals until 1911 when Japan, the USA, the USSR and Great Britain again acting on behalf of Canada,concluded a multilateral treaty for the Preservation and Protection of Fur Seals which became known as "the 1911 Treaty".

The important step gained in this treaty was the curtailment of pelagic sealing at sea, a particularly wasteful method of sealing, however, it did not limit the number of seals which could be killed on the breeding grounds of the Pribilof Islands (USA) and the Commander, Robben and Kurile Islands (USSR). The Treaty required the USA and USSR to supervise the harvest and compensate the other Parties with a share of the harvest in return for their agreement to stop pelagic sealing.

The 1911 Treaty terminated in 1941, but was replaced in 1957 by the Interim Convention on the Conservation of North Pacific Fur Seals* (the Interim Convention). The Convention involves the same Parties as the 1911 Treaty with the exception that Canada is party to the Convention in full rights and Great Britain is no longer a signatory on Canada's behalf. The Treaty as amended retains all the basic principles of the 1911 Treaty and has remained in force through a series of protocols extending the Interim Convention, the latest of which was October 1980. A new Protocol to extend the Interim Convention for a further period is awaiting ratification by the US government.

Purpose

The objective of the Interim Convention is to achieve the maximum sustainable productivity of the fur seal resources of the North Pacific Ocean in order that the "population can be brought to and maintained at the levels which will provide the greatest harvest year after year, with due regard to their relation to the productivity of other living marine resources of the area".

Organization

The Convention established a North Pacific Fur Seal Commission composed of one member from each Party. The Commission elects from its members a Chairman and other necessary officials and meets at such time and place as it may decide. Each Party has one vote and all decisions and recommendations must be by unanimous vote. However, any recommendations regarding the size, the sex and age composition of the seasonal commercial kill from a herd, can be decided upon by only those Parties sharing in the sealskins from that herd.

* The numerous protocols relating to this Convention essentially provided for the continuation of the Treaty from 1941 to 1986.

The duties of the Commission are basically to formulate and coordinate research programmes. It can recommend research programmes to the respective Parties, recommend the appropriate measures to be taken by the Parties in respect to the size, sex and age composition of the seasonal harvest, and finally the terms and need for continuation of the Convention.

Scientific Research

The Treaty is very precise in setting out the scientific requirements and obligations of the Parties who are expected to coordinate their scientific research programmes and investigations of the fur seal resources of the North Pacific.

The Parties have agreed to determine:

(a) "what measures would be necessary to make possible the maximum sustainable productivity of the fur seal resources in order that their populations could be brought to and maintained at levels which would provide the greatest harvest year after year; and

(b) what the relationship is between fur seals and other living marine resources and whether fur seals have detrimental effects on other marine living resources substantially exploited by any of the Parties and, if so, to what extent."

The research requirements cited in the above paragraphs must include the following studies:

i) "the size of each fur seal herd, its age and sex composition;
ii) natural mortality of the different age groups and recruitment of young to each age or size class at present and subsequent population levels;
iii) with regard to each of the herds, the effect upon the magnitude of recruitment of variations in the size and the age and sex composition of the annual kill;
iv) migration routes of fur seals and their wintering areas;
v) numbers of seals from each herd found on the migration routes, in wintering areas, their ages and sexes;
vi) extent to which the food habits of fur seals affect commercial fish catches and the damage fur seals inflict on fishing gear; and
vii) other subjects involved in achieving the objectives of the Convention, as determined by the Commission".

The Parties also agreed to provide additional information on an annual basis of pups tagged, the number of fur seals taken on land or at sea, age, sex and whether or not tagged.

Enforcement

Other provisions in the Convention provide for enforcement and inspection of any unauthorized vessel engaged in pelagic sealing, but it

does provide an exemption to natives who may carry out pelagic sealing under very strict conditions.

The Parties agree, annually, on the total number of sealskins that can be taken commercially. At the end of each season the take is shared based on the number and quality of the skins. Both the USA and the USSR provide to Canada and Japan 15% of their take subject to conditions agreed to by the Parties.

It is the ban on pelagic sealing that marks the success of this Convention and even with the exemption for research purposes pelagic sealing has declined from limits originally set at 2,500 seals in the Eastern Pacific and 2,200 seals in the Western Pacific to insignificant numbers.

Despite the achievements of the Interim Convention it has not worked as well as others in that the annual harvest is half what it was twenty years ago and the causes of the population decline are unknown. The uncertainty about the future of the Convention may in fact be beneficial to the seals if there is no annual harvest but the question of determining the cause of their decline may be much more difficult to ascertain without some international cooperative arrangement.

The Department and the Interim Convention

The Interim Convention has been successful in overseeing a comeback of the Pacific fur seal but still the annual harvest is now only half of what it was in the early 1950's. The concern is how to identify the causes of the population decline and what measures should be taken to counteract them. These decisions have not been taken and are pending on whether or not the Treaty will be renewed for another six years. The generally held view is that the United States will not ratify in view of the pressure being exerted on Congress by the conservationists who were successful in having the 1985 harvest reduced to a subsistence level.

As far as Canada is concerned there is no overwhelming reason to continue the Treaty unless there is an annual harvest and some economic return to be gained. The question of pelagic sealing is not of concern to Canada since legislation could ban the practice if required. In respect to the United States the present administration appears to be resolute in its position of banning any further harvest of seals including pelagic sealing. However, it is presumed that Japan would allow pelagic sealing but not as a directed fishery. The position of the USSR is unknown. If scientific research is required the Parties could make the necessary arrangements without a Treaty, but the Department's research effort on Pacific fur seals would have to be increased substantially.

The United States has talked about a new treaty being prepared for review in the spring of 1987, but as yet there has been no official confirmation or a date set to meet.

AGREEMENT ON SEALING AND THE CONSERVATION OF SEAL STOCKS IN THE NORTHWEST ATLANTIC

AGREEMENT ON SEALING AND THE CONSERVATION OF SEAL STOCKS IN THE NORTHWEST ATLANTIC
and
THE AGREEMENT ON MEASURES TO REGULATE SEALING
and
TO PROTECT SEAL STOCKS IN THE NORTHEASTERN PART OF THE ATLANTIC OCEAN

The Agreement on Sealing and the Conservation of Seal Stocks in the Northwest Atlantic between Canada and Norway was concluded in 1971 and is simply referred to as the 1971 Agreement. In most respects it is similar to the Agreement on Measures to Regulate Sealing and to Protect Seal Stocks in the Northeastern Part of the Atlantic Ocean signed by Norway and USSR in 1957 (the 1957 Agreement).

Purpose

Both Agreements call for the establishment of international cooperation for the purpose of achieving optimum productivity of seal stocks in order to attain population levels capable of ensuring the maximum sustained catch. The Parties involved in both Treaties are expected to coordinate scientific research for the purpose of studying the condition of Atlantic seal stocks. However, the 1971 Agreement places more emphasis on conservation than the 1957 Agreement.

The two Agreements cover harp seal, hooded seal and walrus, but the 1971 Agreement covers bearded seals as well. In actual fact, however, the quotas established are made up entirely of harp and hooded seals since neither Canada nor Norway allow bearded seal or walrus to be hunted commercially.

The Canada/Norway Agreement established a Commission which meets annually and consisted of three representatives from each country. However, the work of the the Commission diminished substantially when in 1977 Canada and Greenland extended their coastal state jurisdictions and the traditional high seas sealing area used by the Norwegians fell within the national jurisdictions of both countries.

The Agreement continues in force out of respect to the traditional sealing rights of Norway but unlike the sealing treaty between Norway and USSR, the Commission does not recommend "total allowable catch limits" (TACs). This function is handled by the Scientific Council of NAFO where the EEC represents the interests of Greenland. The final decision on TACs for harp and hooded seals is made between Canada and the EEC for Greenland and once these TACs are set, the Commission negotiates how the Canadian share of the TAC's will be divided between Canada and Norway in the Canadian 200 mile economic zone.

The importance of both these Agreements has diminished substantially by the extended jurisdiction of coastal States and by the fact that the EEC has placed a ban on the imports of harp and hooded seal skins since October, 1983. The two Agreements are now somewhat symbolic in reflecting their value for international cooperation in the protection and exploitation of seal stocks in the North Atlantic.

THE CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

THE CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (CITES)

The General Assembly of the International Union for the Conservation of Nature and Natural Resources (IUCN) called for "an international convention on regulations of export, transit and import of rare or threatened wildlife species or their skins and trophies" in 1963, but the IUCN initiative was not acted upon until 1973 when the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was agreed upon in Washington, D.C. in 1973. It finally entered into force on July 1, 1975 with the tenth entry of ratification. By 1985, eighty-five states had ratified the Convention and are Parties to it.

The need for such a Convention was first expressed formally in 1911 over the import and export of bird feathers for plumed hats but more recently over the multi-million dollar trade in exotic skins, plants, birds, and ivory. CITES has become one of the most successful of all international treaties concerned with the conservation of wildlife. Its success can be attributed to its basic principles which have been accepted by most States and the simplicity of its enforcement operation than most other treaties of its kind.

Purpose

CITES was designed to regulate international trade in wild animals and plants. Its fundamental principles are laid out in three Appendices which essentially address prohibition of trade, controlled trade, and supporting international enforcement of domestic legislation regulating export. Appendix I prohibits, with few exceptions, international trade of species whose survival is threatened with extinction. Appendix II allows a controlled international trade on species whose survival is not yet threatened with extinction. Appendix III provides a mechanism whereby a Party which has domestic legislation regulating the export of species not in Appendix I or II can seek the support of other Parties in enforcing its own domestic legislation.

Permit System

The Convention operates by use of a permit system and different rules apply for Appendix I and Appendix II species. Very strict rules apply to Appendix I species in that international trade in these species is authorized only on the basis of "exceptional circumstances". Trading permits are only possible for non-commercial purposes and can only be granted by the Scientific Authority of the exporting State if the export is not detrimental to the survival of that species and if the Management Authority of the same State is satisfied the specimen was acquired legally. Before any transaction can take place the State of import must have granted an import permit. Very strict regulations also apply in respect to re-export of Appendix I species. The conditions laid out for import permits of Appendix I specimens has effectively prohibited commercial trade amongst Parties, but trade is permitted of specimens required for scientific or educational purposes. Controls imposed on the

export or re-export of Appendix II species are similar to those which apply to Appendix I species, but the rules for imports are much less stringent.

Annual reports are used to monitor the international trade in wildlife covered by CITES and as such the reports become an effective monitoring instrument. Reporting, however, has tended to be sporadic and late resulting in less than a true account of international trade in wildlife.

CITES exempts the non-commercial exchange of specimens between scientists or scientific institutions from permit requirements provided that the scientists or scientific institutions have been registered for these purposes by a Management Authority of the State in which they are situated.

Marine Mammals

CITES is relevant to the department in that it prohibits the introduction of some marine mammals from the sea without a permit. The Convention defines a specimen to be introduced from the sea if it is "taken in the marine environment and not under the jurisdiction of any State" and is imported into a State.

The reference to marine mammals is to ensure that whales, sea turtles, and other threatened marine animals are not taken on the high seas and then brought into the territory of a Party for commercial purposes. As far as known, no permit for marine mammals identified in Appendix I has ever been granted. The controls on Appendix II species are similar to those which apply to Appendix I but the rules for imports are less stringent.

Reservations

CITES allows Parties to exempt themselves from the requirements of the Convention in relation to species whose inclusion in the Appendices they find objectionable. Reservations must be specific as to the species and must be made known at the time a Party deposits its instrument of ratification. Parties may reserve on any subsequent amendment provided the reservation is made within 90 days of the adoption of the amendment.

Organization

The Conference of the Parties is the decision making body on all matters related to CITES. It meets regularly every two years but may hold extraordinary meetings on the written request of at least one third of the Parties. It approves the budget and makes appropriate recommendations in order to improve the Convention and reviews the list of species included in the Appendices.

The Conference has established a number of Committees to assist in its work namely the Nomenclature Committee and the Identification Manual Committee both of which have limited responsibilities as their names would imply, a Technical Committee deals with problems of implementation and enforcement. A Standing Committee on administrative affairs has in effect become an advisory committee and something like an "Inner Cabinet" or Council of the Conference.

Non-Party governments, the United Nations and its Specialized Agencies have a right to be represented as observers at meetings of the Conference. International, national, governmental and non-governmental bodies or agencies qualified in the protection or management of wildlife may also attend unless one-third of the Parties object. Observers other than the United Nations and its Specialized Agencies are required to pay a participation fee.

Regional economic organizations such as the EEC may join and exercise a right to vote with the number of votes equal to the number of their member States which are Parties to the Convention.

Administration

The administrative structure established by CITES consists of a Secretariat, Management and Scientific Authorities and the Conference of the Parties. The Secretariat consists of a Secretary-General and staff which arranges and services meetings of the Parties, prepares reports and draft resolutions for consideration at meetings. It also prepares an annual report on its work, the status of implemention of the Convention and notices to the Parties on items concerning the names of national scientific institutions entitled to receive specimens. The Secretariat also communicates information to authorized Management Authorities on violations or situations in which trade is adversely affecting a species and announcements on any bans on export and import of specimens.

Management and Scientific Authorities

Each Party is required to designate one or more Management Authorities competent to grant permits or certificates on behalf of that Party and one or more Scientific Authorities. The establishment of such authorities is significant in that collectively they constitute a global network of institutions which cooperate directly with one another without having to resort to formal diplomatic channels.

The Department and CITES

During the few years that CITES has been in force, real progress has been made on limiting the trade of endangered species. Most of the major wildlife trading nations are now Parties and the level of enforcement is improving. There is no doubt that serious instances of non-compliance with the Convention still occur, but most of the Appendix II species are now much more carefully regulated than it was fifteen years ago. International trade in Appendix I species is by and large rare and sporadic.

Of all the reasons that might be given for the success of CITES, it is its administrative system which stands out. The existence of a permanent Secretariat and the administrative obligations imposed on the Parties to set up at least two bodies to enforce the Convention require that the Parties themselves communicate regularly with one another and the Secretariat.

With all the whale stocks managed by the IWC being placed under moratorium the major species have now been listed in Appendix I of the CITES Agreement, an action which effectively places a ban on the trade of whale products.

The Department acts as a Scientific Authority for fish and marine mammals which requires considerable effort in respect to questions on seals and no doubt more so in the near future if the IWC moratorium stands.

The Department considers Arctic marine mammals as a national resource and therefore of sovereign jurisdiction. In this regard steps have been taken to draft a convention on the conservation and management of narwhales between Canada and Denmark (Greenland) since they constitute a shared resource. The move is supported by the Government of the Northwest Territories, Inuit groups and others and may well be brought up as an item for discussion with Denmark in the next round of fisheries discussions.

BILATERAL FISHERIES TREATIES WITH THE UNITED STATES

CONVENTION BETWEEN CANADA AND THE UNITED STATES OF AMERICA FOR THE PRESERVATION OF HALIBUT FISHERY OF THE NORTHERN PACIFIC OCEAN AND BEARING SEA

CONVENTION BETWEEN CANADA AND THE UNITED STATES OF AMERICA FOR THE PRESERVATION OF THE HALIBUT FISHERY OF THE NORTHERN PACIFIC OCEAN AND BERING SEA 1953

The Halibut Convention of 1953 follows the Halibut Conventions of 1937, 1930 and 1923. The historical interest associated with the Halibut Convention of 1923 is worthy of mention in that it is attributed to be landmark event in Canada's path toward attaining independent nationhood. The issue that arose at the time was the question of who should act and sign on behalf of Canada. When it was finally resolved that Canada would be the signatory on behalf of his Brittanic Majesty, it touched off a parliamentary debate throughout the British Empire. Journalists reported that "it impaired the unity of the Empire" and that it was a "formal withdrawal of Canada from the British Empire". The assertion of equality and independence and the solitary signing of the Convention by Canada was also felt in Washington with the United States Senate being fearful of recogniziting the independent statehood of Canada. In registering the Convention, the President of the United States proclaimed the Convention as a Convention between the United States of America and Great Britain whereas Canada described the Convention as one between the United States of America and Canada.

The 1923 Convention was directed at resolving a number of long standing differences on the Pacific halibut fishery between the two countries but more importantly it established the International Fisheries Commission and empowered it to investigate and recommend measures for the preservation and development of the fishery by establishing the basis for scientific management and conservation. Constitutional requirements in the United States dictated the necessity of yet another convention which was followed by the 1930 Convention. It retained the essential elements for scientific management of the resource and added additional regulatory functions which were further refined in the 1937 Convention by including control measures on halibut caught incidentally in other fisheries during the closed season. The 1953 and current Convention broadened the Commission's authority to permit multiple open seasons in any one year.

Organization

The 1953 Convention changed the name of the Commission to the International Pacific Halibut Commission and enlarged its representation to three members from each country.

The Commission established a Conference Board which represents vessel owners and fishermen who review regulatory proposals and alternatives with an Advisory Group composed of fisherman, vessel owners and processors. The measures recommended by the Commission are submitted to the two governments for approval which upon approval, are enforced by the appropriate agencies of both governments.

The Commission is empowered to carry out its own scientific investigations and does so through its own staff on research studies on all aspects of the biology of halibut, catch sampling, gear research and field surveys.

The scientific work of the Halibut Commission is reported in their Annual Scientific and Technical Reports which represent a long series of very definitive papers. Its work includes some of the very best classical oceanographic studies of the Gulf of Alaska and extensive articles on gear selectivity and sampling. Numerous studies are reported on incidental captures of halibut, a problem which has and still plagues the management of this fishery today.

The Convention however, must now be considered in conjunction with the International Convention for the High Seas Fisheries of the North Pacific Ocean in respect to the overlapping responsibilities for the halibut stocks in the eastern Bering Sea. Originally, Japan under the terms of the North Pacific Convention was not permitted to fish the stocks of halibut originating along the coast of North America under the abstention conditions of the Annex to the 1952 Convention. However, the International North Pacific Fisheries Commission concluded that these stocks no longer qualified under the abstention conditions and it established a regulatory area in the eastern Bering Sea and allowed fishing to commence. The Halibut Commission on the other hand regarded these stocks as being fully utilized. Nevertheless the stocks were fished and seriously depleted. The difference of opinion was finally settled when the two Commissions commenced interagency discussion in 1965. In effect both now have a shared responsibility for the halibut resource of the North Pacific.

The Department and the Halibut Commission

The principal contacts with the Commission by the Department are through the Biological Station, Nanaimo. Their work complements one another very well in that the Halibut Commission is primarily involved in stock assessment research while the work at Nanaimo addresses the biology of halibut and multi-species management problems. Both have cooperated on joint programmes and in conducting studies to assist one another as required. The science carried out by the Commission is well-regarded and there is a good peer review relationship existing between Nanaimo and the Commission.

TREATY BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT FO THE UNITED STATES OF AMERICA CONCERNING PACIFIC SALMON

TREATY BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF THE UNITED STATES OF AMERICA CONCERNING PACIFIC SALMON

This Pacific Salmon Treaty came into force in March 18, 1985 terminating the Convention between Canada and the United States on the Protection, Preservation and Extension of the Sockeye Salmon Fishery in the Fraser River System, signed May 26, 1930. The functions of the International Pacific Salmon Fisheries Commission under the old Treaty in effect were transferred to the new Commission, and the assets to the Government of Canada.

Purpose

The Treaty is directed at the means of rebuilding stocks including requirements to improve enhancement, spawning escapements, and joint management actions.

Terms of the Pacific Salmon Treaty (1985)

The Treaty applies to all Pacific salmon stocks which originate in the waters of Canada and the United States, and in one way or another can be affected by the other country.

The Treaty has established a Pacific Salmon Commission made up of Commissioners appointed by each Party. The chairman and vice-chairman are selected by each section and at the end of 12 months their positions are reversed.

The Commission may appoint an Executive Secretary, acquire property and enter into contractual arrangements as required.

The Treaty calls for the establishment of a Committee on Research and Statistics, a Committee on Finance and Administration, and Panels to deal with salmon stocks in three areas identified as Southern, Fraser River, and Northern. The geographical areas are described in detail in the Annexes to the Treaty.

The Panels are expected to provide information and make recommendations in respect to the well-being of the salmon stocks in their area of responsibility. Membership on the Panels is limited to 8 members from each Party. Other committees and panels can be created or eliminated as the need arises. Problems which require action by more than one panel, are to be handled jointly by the panels involved.

The Treaty represents a major departure from the Sockeye Convention in that the Commission has not been provided with broad powers and a high degree of independence in conducting research. The fundamental responsibility for implementation lies with the two Parties, who for instance, must manage their fisheries and salmon enhancement programmes to prevent overfishing and to provide optimum production, in order that each Party receives benefits equivalent to the production of salmon orginating in its home waters. The two Parties are specifically directed as well to cooperate in management research and enhancement and to provide to the

other Party and Commission relevant data for the ensuing year on the estimated size of the salmon runs, spawning escapements required, total allowable catch and management practices to be put in place. Information of a like nature is required for salmon enhancement projects and new projects. The appropriate Panels review and evaluate the findings which are then presented to the Commission for judgement and recommendations to the two Parties.

The Yukon River is viewed in the Treaty as a special case for which both Canada and the United States must conclude negotiations on cooperative management procedures, research programmes, enhancement opportunities and exchange of biological data. The two Parties must also identify an organizational structure to deal with the Yukon River.

There are many other functions and responsibilities stipulated in the Treaty regarding regulations on aboriginal rights, closures, and conservation all of which will bear heavily on the success or failure of the Treaty.

The Department and the New Salmon Treaty

The Commission is still in its organizational phase and as a consequence it is premature to judge its effectiveness at this point in time. It will require considerable scientific effort and commitment to make it an effective instrument for in season management of all the Pacific salmon stocks on the west Coast. The most effected departmental establishment will be the Biological Station, Nanaimo, B.C.

THE CONVENTION BETWEEN CANADA AND THE UNITED STATES FOR THE PROTECTION, PRESERVATION AND EXTENSION OF THE SOCKEYE SALMON FISHERIES IN THE FRASER RIVER SYSTEM

THE CONVENTION BETWEEN CANADA AND THE UNITES STATES FOR THE PROTECTION, PRESERVATION AND EXTENSION OF THE SOCKEYE SALMON FISHERIES IN THE FRASER RIVER SYSTEM

The Sockeye Salmon Fisheries Convention was ratified in 1937 and continued in force until 1985 when it was replaced by the Pacific Salmon Treaty. It is included in this study for historical reference purposes, since some of its functions properties and assets were transferred to either the new Pacific Salmon Commission or the Department of Fisheries and Oceans as allowed for by the Treaty.

Essentially the 1937 Convention applied to the Fraser River, lakes and tributaries and territorial waters and high seas westwards of Canada and the United States with defined seaward boundaries.

The Convention provided for a Commission which had considerable authority including the right to conduct studies and investigate the natural history of sockeye salmon, to operate hatcheries, improve spawning grounds, and carry out other related functions.

The Commission was also empowered to enforce regulations, limit and prohibit the taking of salmon and specify the type of fishing gear that could be used provided it was not contrary to any national legislation.

Research

Over the years the International Pacific Salmon Fisheries Commission undertook extensive research and monitoring programme on sockeye and pink salmon by directing most of its effort on improving the success of salmon runs in the Fraser River and its tributaries. Regulations were set in place if there was any sign of changes in salmon abundance or migration to prevent over exploitation or serious harm coming onto the fishery. The nature of this work involved the Commission in water management problems for the assurance of adequate water flows in salmon streams and water quality protection criteria for pulp and paper effluents and municipal waste treatment discharges and others.

To accomplish the above the Commission maintained a relatively large scientific staff located in New Westminster, B.C. and at several regional laboratories, hatcheries and fishways operated by the Commission.

The Department and the Sockeye Salmon Agreement

With the broad powers assigned to the Commission it basically assumed a very independent role to the extent that very little communication or exchange of information took place between it and the Department. In the face of more broadly based salmon problems on the west Coast it was not suprising to see the entry of a comprehensive salmon treaty with a more open and accessible Commission.

CONVENTION ON GREAT LAKES FISHERIES BETWEEN THE UNITED STATES OF AMERICA AND CANADA

CONVENTION ON GREAT LAKES FISHERIES
between
THE UNITED STATES OF AMERICA AND CANADA

The Great Lakes Fisheries Convention (GLFC) became effective on October 11, 1955 in recognition of the need for the two countries to cooperate together on the solution of problems confronting the fisheries on the Great Lakes in particular those arising from sea lamprey. The first attempt in ratifying a treaty failed in 1946 but with the sudden introduction of the sea lamprey into the Great Lakes both sides renegotiated a modified treaty.

The Convention

The Convention applies to Lake Ontario including the St. Lawrence River to the forty-fifth parallel of latitude, Lake Erie, Lake Huron, Lake St. Clair, Lake Michigan, Lake Superior and their connecting waters, including the tributaries of each of the above to the extent necessary to investigate any stock of fish of common concern or to eradicate or minimize the populations of sea lamprey.

The Contracting Parties are required to establish and maintain a Joint Commission, known as the Great Lakes Fishery Commission, composed of not more than three members from each Contracting Party. The two sides are referred to as the Canadian Section and United States Section. Each Contracting Party may establish for its Section an advisory committee for each of the Great Lakes with the right to attend all meetings of the Commission unless otherwise stated.

The Commission selects from amongst its members the Chairman and Vice Chairman who serve for a two year period, the offices of which are alternated between the Sections on a biennial basis. It is required to hold a regular annual meeting but may hold additional meetings as agreed to by the Chairman and Vice Chairman.

The Commission is permitted to disburse funds for joint expenses and can employ personnel and acquire facilities necessary for the performance of its work. However, it is in the conduct of research and related functions that the Commission has considerable influence and authority.

The Commission essentially can:

a) formulate research programmes designed to provide for the maximum sustained productivity of any stock of fish in the Convention Area and to determine what measures are best adapted for such purposes;
(b) decide to coordinate such research itself;
(c) recommend appropriate measures to the Parties on the basis of the findings of the research programmes;
(d) formulate and implement a comprehensive programme for the eradication or minimization of sea lamprey populations in the Convention Area; and
(e) publish or authorize the publication of scientific and other information obtained by the Commission.

The Commission in conducting the above may hold public hearings in Canada and the United States and take such measures as are necessary for the control of lamprey. It does not have its own research staff and therefore it makes use of official agencies of the Contracting Parties, private, public or international organizations as appropriate.

A scientific committee was established in 1956 consisting of the Executive Secretary of the Commission as the Chairman and two members from each Contracting Party who are assisted by experts or advisors. The Committee is expected to advise the Commission on matters relating to lamprey control and general fishery research in the Convention Area.

Activities of the Commission 1956-1985

At the time the Commission began its work lake trout had been practically eliminated in Lake Huron and Lake Michigan by sea lampreys. Because of the relatively large lake trout populations in Lake Superior, a lamprey control programme became the immediate concern. The programme was based initially on the use of electrical barriers to prevent sea lamprey from reaching spawning areas in streams but with the advent of lampricides, chemical treatment became much more common.

As it turned out the restoration of lake trout proved to be a more difficult problem than the control of sea lamprey and as a consequence the Commission placed considerable priority on the development of a lake trout restoration programme for Lake Michigan and Lake Huron. In order to study the problem in its fullest detail, a Special Committee on Lake Trout Rehabilitation was created with representatives from federal, state and provincial agencies.

As the success of the lamprey control programme was being experienced the Commission prepared a prospectus for the Great Lakes fishery which described in some detail the studies required to achieve a better understanding of the biological, technological and economic problems confronting the commercial and sport fisheries of the Great Lakes. The Commission therefore organized technical committees for each of the Great Lakes and a senior level Management and Research Committee to examine the status and problems of the sport and commercial fisheries and the ways and means of improving the productivity of the fisheries.

The range of problems affecting the fisheries increased dramatically with the presence of DDT and mercury residues in Great Lakes fish requiring the Commission to refer a recommendation in 1970 to the International Joint Commission that water quality standards had to be established for the protection of the fishery resource of the Great Lakes. This recommendation was one of the deciding factors that led to the 1972 Water Quality Agreement of the International Joint Commission.

The Commission after some 18 years of effort has successfully controlled sea lamprey and re-established lake trout and overseen the introduction of Pacific salmon to the Great Lakes but, nevertheless, it recognized that much work still had to be done in improving not only its own organization but in setting forth a Management Policy for Great Lakes

fisheries. This realization led to a new course of action for the Commission involving an examination of all fish stocks, levels of exploitation, habitat conditions, fish diseases, as well as the legal and social aspects related to the fishery.

A number of new committees were struck to deal with these problems. Today the essential work is handled by a Sea Lamprey Committee, Habitat Advisory Board and Fish Disease Control Committee. The Committees involve representatives of the agencies with fisheries or other national resource mandates and the academic community. The one undertaking that is almost totally federal in character, however, is the sea lamprey research and control work carried out by the U.S. Fish and Wildlife Service and the Department of Fisheries and Oceans.

On a geographic basis the five lake committees play a major role in transboundary issues. Each one is made up of representatives from the appropriate Canadian or American authorities responsible for administering the fisheries. In effect they have become the principal regional advisory bodies on stocking programmes, genetic selection of strains for introduction, catches, size restrictions and allocations amongst the various jurisdictions. A Council of Lake Committees addresses issues which affect more than one lake.

The Department and the Great Lakes Fishery Commission

The Commission's success in sea lamprey control coordination of fish population assessments and work on fishery related environmental quality discussions has depended on the commitments made by the responsible agencies on both sides of the border. The work of the department's Great Lakes Fisheries Research Branch in Burlington has proven to be the basis of much of the Canadian input. Its responsibilities to the Great Lakes Fishery Commission and the International Joint Commission are such that the region is hard pressed to handle all the issues and keep ahead of the toxic chemical and fish health problems of the Great Lakes. With such pressures the Department should seek to formulate arrangements with other agencies to share the work and improve the total capability of all these bodies involved in Great Lakes fishery and water quality research.

OTHER BILATERAL FISHERIES AGREEMENTS

OTHER BILATERAL FISHERIES AGREEMENTS

Canada is signatory to thirteen bilateral fisheries agreements and one with the EEC covering the fisheries on the East coast. The agreements are:

Bulgaria	In force	September 27, 1977	
Cuba	In force	May 12, 1977	
Denmark	In force	December 22, 1981	
France	In force	March 27, 1972	
Germany D.R.	In force	October 6, 1977	
Japan	In force	April 29, 1978	
Norway	In force	May 11, 1976	
Poland	In force	May 5, 1982	
Romania	In force	January 17, 1978	
Portugal	In force	July 18, 1977	
Spain	In force	June 10, 1976	
United Kingdom	In force	May 27, 1972	- Exchange of Notes
USSR		May 1, 1984	
EEC	In force	January 1, 1984	

All of these agreements are essentially similar in nature and were signed to reflect Canada's extension of jurisdiction over the living resources out to 200 nautical miles in accordance with the principles set out in the Third Law of the Sea Treaty. The EEC agreement is similar in nearly all respects to these bilaterals but it recognizes the right of the EEC to negotiate on behalf of its Members.

The Agreements cover the right of Canada to determine annually the allocations of surplus stocks to foreign fishermen and the requirements for licences. They also cover the conditions for access to ports, repair facilities, supplies, change of crews, etc.

Although the Agreements respect the need for scientific research there has never been a concerted effort by any of the Parties to engage in serious scientific research. Canada has not promoted joint scientific studies for several reasons; some of the countries no longer fish off the East coast because the allocations are too small to be commercially viable. While for others their research capabilities are low and the value of a joint scientific undertaking would be of questionable value. For still others an aggressive position taken by the Department to promote joint scientific studies could well raise expectations of increased fish allocations which would not be in Canada's best interest.

It is only the agreement with the USSR that any meaningful scientific discussions and programmes are organized. The Soviets undertake scientific research on the East coast annually and are one of the major foreign contributors of fisheries information and oceanographic data to Canada.

OTHER BILATERALS

THE INTERNATIONAL JOINT COMMISSION
(IJC)

The International Joint Commission (IJC) is a permanent body set up pursuant to the Boundary Waters Treaty of 1909. It consists of six Commissioners three of whom are Canadian and three of whom are American with Canadian and American co-chairmen.

The IJC has headquarters offices in Washington, D.C., and Ottawa each staffed with a small group of advisors and a Secretary for each section. A permanent regional office was established in Windsor, Ontario in 1973 specifically to assist the Commission in its responsibilities under the terms of the 1972 Great Lakes Water Quality Agreement.

The work of the Commission is of direct interest to the Department in terms of controlling water levels and water quality of the Great Lakes. The IJC, however, is not concerned exclusively with Great Lakes issues, but with any international water problem whether it be development, diversion, water quality or exploitation along and across the boundary of the two countries including Alaska, a distance of the order of 8500 kms.

The Commission has engaged the department over the years in quite a number of major studies not the least of which were Passamaquoddy Tidal Power, Pollution of the Lower Great Lakes, Great Lakes Water Quality Agreement of 1972 and 1978, and the Garrison Diversion to cite only a few.

Purpose

The Boundary Waters Treaty of 1909 was set up to prevent disputes by the two countries over the rights, obligations, or interests of either Party or its inhabitants. One of its key functions was and still remains is to make provision for the adjustment and settlement of such questions.

Definition of Boundary Waters

For the purposes of the treaty "boundary waters" are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, along which the international boundary between Canada and the United States runs including all bays, arms and inlets. The treaty does not include tributary waters which in their natural channels would flow into such lakes, rivers and waterways.

Responsibility of the Parties

The treaty is very explicit in identifying the need for both countries to share the use and responsibility for managing such waters as a resource on an equitable basis. It provides for equal access and navigation of ships, vessels, and boats of both countries including Lake Michigan and to all canals connecting boundary waters which exist now or could be constructed in the future; and protects one another from interference or diversion of the natural channel of waters on either side of the boundary that could give rise to injury of the other Party. It specifically limits

water diversions in the Niagara River above the Falls of Niagara to protect this natural site.

The essential feature of the Treaty is that each Party has equal and similar rights in the use of those waters defined as boundary waters. Neither Party is permitted to undertake remedial, protective works, or dams which would effect the natural level of waters on the other side of the Boundary without approval of the International Joint Commission.

Both parties are expected to respect the water quality of boundary waters and waters flowing across the boundary and not to pollute to the injury of health or property of the other Party.

The treaty specifies also the order of precedence for the uses of boundary waters. They are:

1) "uses for domestic and sanitary purposes;
2) uses for navigation, including the service of canals for the purposes of navigation; and
3) uses for power and for irrigation purposes".

Responsibility of the Commissioners and Commission

The operating concept of the IJC assumes that solutions to problems should be sought by the Commissioners, who in effect serve both governments. All Commissioners must make a solemn declaration in writing that they will faithfully and impartially perform their duties imposed under the Treaty. Thus the primary loyalty of Commissioners is to the Treaty and of the more than 100 matters referred to it the Commissioners have divided themselves along national lines on only three occasions.

The Commission's responsibilities under the 1909 treaty fall into three categories. The Commisison has quasi-judicial power in approving or withholding approval of applications on the use, obstruction or diversion of boundary waters on either side. These powers extend to the approval of works in waters that cross the boundary when such works would affect the natural water level on the other side of the boundary. Such approvals and their conditions are binding on both countries and the private parties, if any, involved in the application.

Either government can refer a problem or matter of difference to the IJC under the Treaty. In practice, the two governments usually consult on the terms and then transmit a Joint Reference to the Commission. The responsibility of the IJC in such cases is to investigate, to report the facts and circumstances to the two governments and to make recommendations. In implementating these recommendations the two Governments sometimes have given additional responsibilities to the Commission in addition to the powers under the Boundary Waters Treaty. The 1972 and 1978 Great Lakes Water Quality Agreements are examples of the formally conferred additional responsibilities.

Under Article X of the Treaty the Governments can refer questions or problems to the Commission for decision rather than for report and recommendations. Such questions need not be restricted to the "common

frontier" but may embrace the subject of any difference between Canada and the United States. Such a reference, however, requires the consent of both Governments; in the case of the United States such an action would involve the prior advice and consent of the U.S. Senate and the consent in Canada of the Governor General in Council. This particular category of responsibility is one that has been held in reserve by the two governments.

The Commission does not maintain a large technical staff but rather it draws upon the most experienced and competent individuals in both countries who in turn are engaged on a joint undertaking when a reference is made to the IJC by the governments. The letter of reference invariably states that the Governments will assist the Commission by making available the qualified personnel of government agencies. In responding to a Letter of Reference the Commission usually establishes an international board of advisers to organize and carry out the required technical studies and field work. Similarily when the Commission approves an application for the use of waters or the construction of some work it usually specifies the conditions and terms of an Order of Approval and compliance through an International Board of Control.

The Commission currently has twenty-four boards of different types including control, investigative and advisory which are listed as follows.

BOARD OF CONTROL
- St. Lawrence River
- Niagara River
- Lake Superior
- St. Croix River
- Rainy Lake
- Lake of the Woods
- Souris River
- St. Mary-Milk Rivers
- Kootenay Lake
- Columbia River
- Osoyoos River
- Skagit River
- Lake Champlain

POLLUTION ADVISORY BOARDS
- St. Croix River Pollution
- Rainy River Pollution
- Red River Pollution
- Air Pollution-Boundary

GREAT LAKES WATER QUALITY AGREEMENT
- Great Lakes Water Quality
- Great Lakes Science Adv.

INVESTIGATIVE - ENGINEERING BOARDS
- Lake Champlain-Richelieu River
- Souris and Red Rivers
- Michigan/Ontario Air Pollution
- Lake Erie Regulation
- Great Lakes Diversions and Comsumptive Uses

Poplar Water Quality
Tech. Info. Network
Great Lakes Levels Advisory

The reader will find that over 100 IJC documents have been printed covering applications, references, and actions taken by the Commission. Many of which have called for departmental involvement.

The Department and the IJC

As has been mentioned the Department over the years has been engaged by the IJC in a number of References and Boards only one of which is identified here, namely the Transboundary Implications of the Garrison Diversion Unit it serves to illustrate the importance of departmental involvement and responsibilities for maintaining high quality science in respect to international negotiations.

The construction of the Garrison Diversion Unit was authorized by the United States Congress in 1965. The purpose of the Project was to irrigate about 250,000 acres to provide municipal and industrial water to some 14 communities in North Dakota using water diverted from the Missouri River. Since many of the features of the project fell within the Hudson Bay Drainage Basin, most of the drainage and wastewaters from the irrigated areas were to flow into the transboundary streams and rivers into Hudson Bay. The Province of Manitoba along with others expressed reservations. The concerns focussed on the leaching of irrigated soils and the subsequent degradation of the water quality of the Souris-Assiniboine and Red Rivers as well as Lakes Manitoba and Winnipeg. The possible introduction of foreign fish, fish eggs, parasites, diseases and other biota into Manitoba waters was viewed with concern and alarm. The matter was referred to the IJC in 1975 with a request for recommendations as to what the two governments should do.

Of the numerous subjects and concerns reviewed by the International Garrison Diversion Study Board, the case prepared by the scientists of the Freshwater Institute against the introduction of foreign biota to the Hudson Bay Drainage Basin was the overriding factor that forced the Garrison Diversion Unit to eliminate direct connections between the Missouri River and Hudson Bay Drainage Basin. A matter which this Department can take considerable credit.

GREAT LAKES WATER QUALITY AGREEMENT (1972)

GREAT LAKES WATER QUALITY AGREEMENT (1972)

The International Joint Commission reference on the Pollution of Lake Erie, Lake Ontario and the International Section of the St-Lawrence River called for extensive studies by fisheries scientists and oceanographers from 1964 to 1969 which led to the signing by the Government of Canada and the Government of the United States on the Great Lakes Water Quality Agreement pf 1972.

This agreement was intended to prevent further pollution of the Great Lakes System in view of the expected continuing population growth, resource development and demands for water use. It provided the means for adoption of common objectives on the development and implementation of cooperative programmes and other measures.

The Commission was granted the necessary powers and responsibilities for the implementation of the Agreement which led to the establishment of a Great Lakes Water Quality Board, a Research Advisory Board, and other subordinate bodies including a regional office which is located in Windsor, Ontario.

The Research Advisory Board initially addressed three critical Great Lakes concerns, toxic substances, water quality and the Great Lakes ecosystem and phosphorus limitations.

The eutrophicatin problem identified in the 1970 report on the Lake Erie, Lake Ontario and the International Section of the St-Lawrence River became a major focus of the Fisheries Branch, Burlington on nutrients, ecological effects on non-phosphate detergent builders, water quality management models and phosphorus control.

However, by 1977, it became clear that the progress on effective municipal and industrial waste treatment and phosphorus removal were short term priorities, whereas problems involving pollution from diffuse sources such as atmospheric fall-out, various land-use activities and toxic chemicals required more time for solution.

These problems were identified in a new Water Quality Agreement of 1978.

GREAT LAKES WATER QUALITY AGREEMENT (1978)

THE GREAT LAKES WATER QUALITY AGREEMENT OF 1978

The purpose of this Agreement was to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem and to develop programmes, practices and technology necessary for achieving a better understanding of the ecosystem.

In order to accomplish the above the Parties agreed that:

a) "the discharge of toxic substances in toxic amounts be prohibited and the discharge of any or all persistent toxic substances be virtually eliminated;
b) financial assistance to construct publicly owned waste treatment works be provided by a combination of local, state, provincial, and federal participation; and
c) coordinated planning processes and best management practices be developed and implemented by the respective jurisdictions to ensure adequate control of all sources of pollutants."

The Agreement lays out five general objectives covering substances that adversely affect aquatic life or waterfowl; floating materials such as debris, oil and other immiscible substances, materials or heat that adversely produce colour, odour or effect taste; materials and heat that cause toxic or harmful effects to human, animal or aquatic life and nutrients that create growths of aquatic life that interfere with the benefical uses of water.

The specific objectives deal with persistent and non-persistent toxic substances, pesticides, metals, oil, petrochemicals, inorganic materials, asbestos, solids, bacteria, fungi and radioactivity.

The Agreement calls not only for the Parties but State and Provincial Governments to be consistent with the General and Specific Objectives in their standards and regulatory requirements and that they orient their research programmes to respond to the research priorities identified by the Science Advisory Board.

The Specific Objectives are dealt with in 12 annexes:

Annex 1 Specific objectives on polluting substances
Annex 2 Designation of limited use zones where Specific Objectives may not apply
Annex 3 Control of phosphorus for the minimization of eutrophication
Annex 4 Discharges of oil and hazardous polluting substances from vessels
Annex 5 Discharges of vessel wastes
Annex 6 Review of pollution from shipping sources
Annex 7 Dredging
Annex 8 Discharges from onshore and offshore facilities
Annex 9 Joint contingency plan
Annex 10 Hazardous polluting substances
Annex 11 Surveillance and monitoring
Annex 12 Persistent toxic substances

The Department and the Great Lakes Water Quality Agreements

The Great Lakes Water Quality Agreement is of historic significance to the Great Lakes Fisheries Research Branch in that the laboratory came into its own in 1972 with the first Water Quality Agreement and was expanded with the signing of the 1978 Agreement. The clauses within the Great Lakes Water Quality Agreement of 1978 which are most relevant to the Department are contained in Annex 11, Surveillance and Monitoring and Annex 12, Persistent Toxic Substances.

In responding to the Great Lakes Water Quality Agreement of 1978, the Fisheries Research Branch in Ontario has organized its work into three principal programmes namely Surveillance, Environmental Toxicology, and Fish Habitat Studies Programmes.

The Surveillance Programme meets the requirements of Annex 11 and provides baseline information on the Great Lakes habitat. It encompasses the surveillance of Great Lakes biota for levels of contaminants, and biological production related to nutrient loadings. The programme also includes an assessment of fish health, chemical sediment analyses and organic analyses of some pesticides.

The Environmental Toxicology Programme is directly related to Annex 12 in that it embraces research on the toxicity of inorganic and organic contaminants on Great Lakes biota for the setting of water quality objectives to protect the living resources of the lakes. The programme includes research in bio-accumulation, bio-magnification and studies of the physical and chemical pathways and effects on recipient organisms.

The Fish Habitat Studies Programme is a field and laboratory investigation of whole ecosystems with emphasis being placed on the interactions of populations and their response to stress and changing conditions. Studies on the effects of airborne contaminants and acid precipitation on freshwater ecosystems form a major part of this programme.

AGREEMENT BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF THE KINGDOM OF DENMARK FOR COOPERATION RELATING TO THE MARINE ENVIRONMENT

AGREEMENT BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF THE KINGDOM OF DENMARK FOR COOPERATION RELATING TO THE MARINE ENVIRONMENT (MECA)

This agreement is one of a special nature designed to protect the arctic marine environment of Nares Strait, Baffin Bay and Davis Strait described as the "waters lying between Canada and Greenland and of its living resources". The agreement came into force on August 26, 1983 in response to the concern expressed by Greenlanders and the Danish Government on the Panarctic project. The Greenlanders perceived this major project as one threatening their livelihood and traditional way of life in view of the proposed routeing and numbers of tankers involved.

The agreement applies to the prevention, reduction and control of pollution and calls upon both Parties to investigate violations and notify one another of any undertaking that might create a significant risk.

There are several other aspects of the Treaty covering compensation facilitation of access and settlement of disputes etc., however, the most important aspect of the Treaty for the Department is the requirement to exchange scientific information.

Status of Negotiations

On June 19 and 20, 1986 Danish and Canadian representatives commenced discussions on the implementation phase of the MECA Agreement. Specifically the delegations began the process of drawing up detailed operational plans and responses for oil spills and other pollution incidents, and the identification of scientific programmes of common interest and vessel traffic management schemes.

The scientific aspects were the following:

1) Vessel/Environmental Interactions including but not limited to
   a) vessel noise
   b) alterations in natural ice regimes
   c) interference with native harvest.
2) Oceanographic Studies
   a) circulation
   b) ocean climate
3) Contaminant Studies
   a) heavy metal contamination in sediments and suspended particulate matter
   b) radionuclide assessments of seawater
   c) heavy metal levels in marine mammals.
4) Scientific Response Plan
   a) development of a cooperative scientific response.
5) Meteorological and Ice Services
   a) enhancement of present services.

Both Parties agreed to exchange research vessel cruise plans and to begin the development of scientific response plans to cover an oil spill event.

Additionally opportunities were identified for Bowhead whale studies, exchange of scientists and use of ships of opportunity.

Contacts were named for all the above issues and follow-up action will be required by the Department.

SCIENCE AND TECHNOLOGY BILATERAL AGREEMENTS

SCIENCE AND TECHNOLOGY BILATERAL AGREEMENTS

Canada is signatory to a number of bilateral S&T agreements and is currently engaged in negotiations on others. The agreements vary somewhat from one another reflecting policies in place at the time, with a clear shift in emphasis from science based agreements orginally envisaged as the means of leading into technology and joint ventures, to those which are much more directly coupled to technology and hence economic opportunities. The agreements are also now much less formal than their predecessors where "Mixed Commissions" were the vogue for negotiations as in the case with France, Belgium, and the USSR. The more recent agreements with FRG and Japan are open and flexible with departments being expected to act on their own initiatives.

The five signed bilateral agreements are with France (Culture) 1965, Belgium (Science) 1971, Federal Republic of Germany (Science) 1971, USSR (Economic Cooperation) 1976, and Japan (Science and Technology) 1986. In respect to other agreements, a letter of intent has been exchanged with the United Kingdom, and a Joint Statement of intent has been signed between the two Ministers of Science and Technology for Canada and Korea. An agreement has been drawn up with Norway, but awaits signature while a draft agreement is being negotiated with Brazil. The possibility of opening up talks with Israel and Argentina is being considered for the future.

Canadian S&T polcies recognize the importance of science and technology in gaining access to highly competitive international markets and S&T agreements are intended to be used a means of obtaining domestic economic benefits through international collaboration and transfer of technology. Nearly all countries regard S&T agreements in the same way and most now promote the entry of the private sector into any agreement for technology development. The difficulty, however, is one of finding suitable partners who can match their respective interests in competitive markets. Scientifically, the agreements are much more successful in that it is relatively easier to gain a partner in pre-competive research.

The present policy of expanding the number of bilateral agreements is not being well received by departments in view of budget and programme reductions.

CANADA BELGIUM AGREEMENT - SCIENCE, 1971

The Canada Belgium Agreement of 1971 has not played a major role in departmental science programmes for some time. It was used extensively when the Department was involved in the NATO Committee on the Challenges of Modern Society (CCMS) when Canada and Belgium cooperated on a pollution study of the southern North Sea. Of interest to Canada at the time were the developments of mathematical modelling techniques at the University of Liège and their potential application to the Gulf of St. Lawrence and Strait of Georgia. A Canadian scientist took part in these studies and was seconded to the University of Liège project team for a period of one year.

The programme had other beneficial aspects in that it led to a major colloquium on Oil Spills which resulted in a number of key recommendations referred to the 1973 IMCO (IMO) Conference on the Prevention of Marine Pollution from Ships.

When this work came to a close, direct cooperation with Belgium in ocean studies virtually ended. The Agreement, however, can still provide an opportunity for visits of French speaking Belgium scientists to Canada and the engagement of young Belgium Science "Co-operants" who can serve in Canada in lieu of their military service.

ANNEX
Canada-Belgium

The operative paragraphs in this Agreement are as follows:

The Contracting Parties will together determine those areas of cooperative activity to be carried out under this Agreement. Such activities may be promoted and implemented in the following ways or in such other ways as may be agreed between the Contracting Parties:

a) "visits by individuals and delegations for studies, training, lectures, consultation and conferences and for exchanges of views and experience regarding science and technology and the industrial applications of science and technology;
b) organisation of bilateral symposia and conferences on scientific and technological developments;
c) arrangements for the exchange of scientific and technolgical information and documentation;
d) joint consultation and cooperation on specific scientific, technological and industrial problems;
e) the exploration and definition of new forms and areas of cooperation for the promotion and implementation of research projects and business ventures;
f) cooperation in the technological aspects of new industrial activities."

THE CANADA USSR AGREEMENT-ECONOMIC COOPERATION, 1976

This agreement is the only one really being used for political purposes in attempting to engage the Soviets in some joint arctic ocean projects. The Soviets have basically ignored our overtures as well as those of other countries and international bodies. However, the agreement is so specifically oriented to technology and manufacturing that it has little relevance to the Department except the general reference to science. A marine mammal programme proposed by the Department is being examined by the Soviets, but its final status is undetermined. DIAND and DOE, however, do have ongoing programmes with the Soviets in the Arctic and on wildlife.

ANNEX
CANADA-USSR

The operative paragraphs in this Agreement are:

1. Subject to the laws and regulations in force in either country, the co-operation under this Agreement shall include measures intended to promote:
   a) "purchases and sales of machinery, equipment and engineering services for the construction of new enterprises and for the expansion and modernization of existing enterprises in the fields of raw materials, agriculture, machinery and equipment, finished products, consumer goods and services;
   b) purchases and sales of industrial materials, agricultural products, finished products, consumer goods, and services;
   c) purchases, sales and licensing of patent rights and proprietary know-how, designs, and processes;
   d) joint efforts in the implementation of projects of common interests;
   e) joint efforts, where appropriate, in the construction of industrial and other facilities in third countries, particularly through supply of machinery, equipment and services;
   f) implementation of industrial co-operation between Canadian firms and Soviet industrial enterprises where this would be of mutual benefit;
   g) further expansion and deepening of scientific and technical co-operation in fields of common interest to the Contracting Parties;
   h) the regular exchange of information on basic economic, industrial and commercial trends.

2. Furthermore the Contracting Parties shall determine by mutual agreement other fields in which they consider the development of economic and industrial co-operation to be desirable taking particular account of the resources of the two countries and their requirements of raw materials, equipment and technology."

CANADA FEDERAL REPUBLIC OF GERMANY AGREEMENT - SCIENCE, 1971

Since the entry into force of this agreement in 1971 it has proven to be the most successful and active of any bilateral arrangement involving the Department. Its success can be attributated to the fact that both countries are technologically about equal in the marine sciences field.

The Agreement is monitored regularly by both sides with named individuals serving as primary contacts and reporting twice yearly. An annual visit by a senior marine scientist from Germany has become a regular feature of this agreement for the purpose of assessing progress, priorities and new opportunities.

ANNEX
CANADA - FRG

The operative paragraphs in the Agreement are:

"In order to promote the implementation of this Agreement, the Contracting Parties will consult once a year, or as often as is considered necessary, alternately in the Federal Republic of Germany and in Canada. In particular, the following matters will be subjects for consultation:

a) The determination of cooperation under this Agreement for the following year,
b) The discussion of fields of cooperation,
c) The handling of all problems arising in connection with this Agreement.

The exchange of information in the fields covered by this Agreement may take place between the Contracting Parties themselves or between the agencies, organizations and enterprises to be designated by them."

Projects under the Canada FRG Agreement are:

Sediment-seawater interaction using enclosures
Caisson Experiments (Intertidal sediment-seawater systems)
Standarlization of techniques to evaluate the bioavailability of metals
Phytoplankton primary production
Detection and assessment of sub-lethal ecotoxicological effects
Comparison of methods for sampling and extraction of organic compounds from seawater
North Atlantic Circulation
Arctic deep water formation
Carbon Transport in major world rivers
Comparative investigation of natural organic constituents of coastal waters
Organic chemistry of marine sediments
Preparation and execution of open ocean baseline studies
Development of sub-lethal bioassays
Development and application of baroclinic tidal model
Data bank management systems in oceanography
Remote sensing of sea ice
*FLI development
Arctic Marine ecology
Sensor Development
Fish health
Aquaculture

*THE FLUORESCENCE LINE IMAGER (FLI)

The FLI project was initiated by the Department with a Canadian company to develop a remote sensing instrument for detection of fluorescence signals from ocean waters. The instrument has proven so successful for agricultural, forestry and fisheries purposes that interest has been expressed by other countries in joint development, notably by FRG.

The programme is one that evolved from a scientific interest to a joint Canadian government industry venture. It is now at that technological stage where government to government arrangements could lead to a private sector venture between Canada and FRG.

CANADA FRANCE AGREEMENT - CULTURE, 1965

Historically, the Canada France Agreement had not been used extensively by the Department, but in recent years it has emerged as a vehicle for developing scientific ties with France in both ocean science and fisheries.

France has placed considerable importance on expanding its bilateral agreements and has sent a number of senior scientists the world over including to Canada to explore potential bilateral programmes. Oceanography emerged as one programme of common interest, with DFO and EMR responding through a return visit and negotiating a Letter of Intent Concerning Programmes of Cooperation in Oceanography and Marine Geosciences between the Centre National pour l'Exploitation des Océans (CNEXO) now the l'Institut Française pour les Recherches sur l'Exploitation de la Mer (IFREMER), the Science Sector of the DFO and the Earth Sciences Sector of EMR signed in 1983.

The cooperative programmes are:

a) dynamics of carbon in abyssal environments
b) mid-ocean ridges, hydrothermal processes
c) passive continental margins
d) data management protocol
e) preparation of a bilingual French-English Thesaurus in ocean sciences

The first two of these projects have been quite active and are on going but the remaining three are presently inactive for different reasons. It was realized at the outset that the passive margin project was one separated by geography which could only be conducted if ships from the two countries were made available. The cost of such an undertaking is formidable and it simply has been left as consideration for the future.

The data management protocol has not yet been exploited in the direct exchange of data however, bilateral contacts have been made on data management systems and programmes. The preparation for the biological Thesaurus on ocean sciences is at a low ebb in that funding is simply not available in either country.

The Department has availed itself of the Canada-France Agreement which provides an opportunity for French university graduates to serve their national military service abroad as "Co-operants." For minimal costs (subsistence allowance) the Department has engaged a number of very talented and well-trained scientists for a period of 16 months.

THE CANADA JAPAN AGREEMENT S&T

The Canada-Japan Agreement was signed in April, 1986 and like other agreements it recognizes the need to cooperate in the exchange of information on scientific and technological subjects. Altough this bilateral has only just been signed the Department is involved in five major studies, Seafluxes Enclosure Experiment, North Pacific Pelagic/Benthic Experiment, North Pacific CO_2 Monitoring Experiment, Fluorescence Transients and Photosynthesis in Algae, Oceanographic Data Management and Data Services.

Two additional Canadian proposals are contemplated for the future namely the Development of Expert Systems for environmental data management and North Pacific Circulation

ANNEX
Canada-Japan

The operative paragraph to this Agreement are:

1. "For the purpose of effective implementation of this Agreement, the Contracting Parties shall establish a Joint Committee on Scientific and Technological Cooperation, the functions of which shall be:

   a) to exchange information and views on scientific and technological policy issues;
   b) to review the cooperative activities and accomplishments under this Agreement; and
   c) to provide advice to the Contracting Parties with regard to the implementation of this Agreement and the orientation of the cooperative activities thereunder.

2. The Joint Committee shall meet in principle every two years alternately in Canada and Japan at mutually agreed times."

CANADA/KOREA -

Joint discussions on science and technology have recently been held by the Ministry of State for Science and Technology of Canada and the Ministry of Science and Technology of the Republic of Korea. The discussions held in June, 1986 were intended to lead to a formal agreement between the two countries, however, a number of science-based departments expressed reservations on such an agreement. A joint statement, however, was signed by the two Ministers which recognized the growing importance of science and technology to economic growth and called for the two countries to promote cooperation.

Both Ministers agreed to examine possible areas and programmes for cooperation and report their findings by April 30, 1987.

The subjects addressed in this statement are the following:

a) "encourage contact between respective institutes, enterprises, and scientists;
b) encourage joint R&D projects of common interest; and
c) encourage the exchange of scientific and technological information."

In addition, the Ministers resolved to examine the potential for collaboration between the two countries by:

a) "identifying priority technologies, relevant to industrial productivity and competitiveness;
b) considering ways and means by which technological cooperation might be developed further to the benefit of both countries; and
c) identifying and recommending specific objectives, modalities and actions by which such opportunities might be realized."

CANADA-UNITED KINGDOM

Canada and the United Kingdom have held discussions on a number of topics to ascertain the potential for science and technology cooperation. Both Parties identified common areas of interest, but with the longstanding relationships that have existed between the two countries there was no overwhelming support to formalize an agreement. The projects identified have simply been documented in an exchange of notes.

Projects which were identifed by the Department are:

- Biological Oceanography
- Ocean circulation modelling
- Ocean Remote Sensing
- Tidal and Storm surge models
- Freshwater dispersion under ice cover
- Use of British Admiralty Archives for historical ocean climate studies

CANADA-BRAZIL

An agreement with Brazil is being pursued and has been a matter of discussion for some time. The Brazilians would like a formal government to government agreement while Canada would prefer a less formal arrangement. A draft MOU has been forwarded to Brazil to seek an accomodation of the two positions. In the interim science-based departments have been invited to pursue their own interests and opportunities with Brazilian partners.

With the launching of a new national plan in Brazil for the development of the marine resource sector, seven Brazilian institutes have expressed interest in joint research related to the following Canadian proposals:

a) physiology of picoplankton;
b) photosynthetic efficiency at low light intensities;
c) studies of suspended particulate matter in the Amazon plume; and
d) chemical analysis of Amazonian and coastal waters.

Brazil is currently preparing workshops with the United States, France and FRG on specific topics and would like to develop a workshop with Canada. They are interested in joint Antarctic research projects as well and would like to ascertain Canadian intentions for the Scientific Committee on Antarctic Research and the Antarctic Treaty. Brazil has also expressed interest in scientific instrument development since they are almost totally dependent on foreign suppliers. They have suggested the possibility of BIO being a Canadian participant with them.

Canada-Norway

Discussions have been taking place with Norway and an Agreement is being readied for signature. No joint departmental programmes have formally been identified as yet.

The Departmental and Bilateral S&T Agreements

The Department enjoys very good success on the bilateral projects with Germany and Japan. In fact the work conducted by this Department with Germany is cited as being one of the best examples of successful bilateral cooperation.

Despite the successes that have been achieved, however, the restraint programme introduced by the government has seriously eroded some projects and stopped others. The present policy of External Affairs to expand the number of bilateral agreements has not been supported by the Department until the matter of resourcing has been resolved.

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INTERNATIONAL SCIENTIFIC AFFAIRS RELATIONSHIPS OF THE DEPARTMENT OF FISHERIES AND OCEANS

LIST OF ACRONYMS

LIST OF ACRONYMS

ACMRR	Advisory Committee on Marine Resources Research
ASFA	Aquatic Sciences and Fisheries Abstracts
ASFIS	Aquatic Sciences and Fisheries Information System
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCCO	Committee on Climatic Changes and the Ocean
CCMS	NATO Committee on the Challenges of Modern Society
CFS	Committee on World Food Security
CICAR	Cooperative Investigations of the Caribbean
CLC	International Convention on Civil Liability for Oil Pollution Damage
CMG	Commission for Marine Geology
CNEXO	Centre National pour l' Biploitation des Océans
COAG	Committee on Agriculture
COFI	Committee on Fisheries
COFO	Committee on Forestry
COGENE	Scientific Committee on Genetic Experimentation
COSPAR	Committee on Space Research
COSTED	Committee on Science and Technology in Developing Countries
COWAR	Committee on Water Research
CPPS	Comision Permanente de Pacifico Sur
CSC	Chart Standardization Committee
CSK	Cooperative Studies of the Kuroshio
CWP	Coordinating Working Party
DIESA	Department of International Economic and Social Affairs
DTCD	Department of Technical Cooperation for Development

ESCAP	Economic and Social Commission for Asia and the Pacific
EUROSTAT	The Statistical Office of the European Communities
FAGS	Federation of Astronomical and Geophysical Services
FAO	Food and Agriculture Organization
FGGE	First GARP Global Experiment
FIG	Fédération Internationale des Géomètres
GARP	Global Atmospheri Research Programme
GDPS	Global Data Processing System
GEBCO	Global Bathymetric Chart of the Ocean
GEEP	Group of Experts on the Effects of Pollutants
GEMS	Global Environmental Monitoring System
GEMSI	Group of Experts on Methods, Standards and Intercalibration
GESAMP	Group of Experts on the Scientific Aspects of Marine Pollution
GIPME	Global Investigations of Pollution in the Marine Environment
GLFC	Great Lakes Fisheries Convention
GOS	Global Observing System
GTS	Global Telecommunications System
IABO	International Association of Biological Oceanography
IAEA	International Atomic Energy Agency
IALA	International Association of Lighthouse Authorities
IAPSO	International Association of Physical Sciences in Oceanography
IBN	International Bioservices Networks
IBP	International Biological Programme

ICCAT	International Convention on the Conservation of Atlantic Tuna
ICG	International Coordination Group
ICNAF	International Commission for the Northwest Atlantic
ICSEAF	International Commission for the Southeast Atlantic Fisheries
ICSPRO	Inter-Secretariat Committee on Scientific Programmes Relating to Oceanography
ICSU	International Council of Scientific Unions
IFREMER	l'Institut Française pour les Reclercles sur l'Exploitation de la Mer
IGOSS	The Integrated Global Ocean Service System
IGY	International Geophysical Year
IHB	International Hydrographic Bureau
IHO	International Hydrographic Organization
IIOE	International Indian Ocean Expedition
IJC	International Joint Commission
ILO	International Labour Organization
IMO	International Maritime Organization
INT	International Chart Series
IOCARIBE	IOC Sub-Commission for the Caribbean and Atlantic Regions
IODE	International Ocean Data Exchange
IRPTC	International Register of Potentially Toxic Chemicals
IRS	International Referral System
ITIC	International Tsunami Information Centre
ITU	International Telecommunications Union
ITSU	International Tsunami Warning System

IUBS	International Union of Biological Sciences
IUCN	International Union for Conservation of Nature and Natural Resources
IUGS	International Union of Geological Sciences
IWGMP	Intergovernmtal Working Group on Marine Pollution
JSC	Joint Scientific Committee
LDC	London Dumping Convention
MAB	Man and the Biosphere
MAPMOPP	Marine Pollution Monitoring Pilot Project
MARPOL	International Convention for the Prevention of Pollution from Ships
MEPC	Marine Environment Protection Committee
MSC	Maritime Safety Committee
NAFO	Northwest Altantic Fisheries Organization
NODC	National Oceanographic Data Centre
OECD	Organization for Economic Co-operation and Development
OETB	UN Office of Ocean Economics and Technology
OILPOL	International Convention for the Prevention of Pollution of the Sea by Oil
OSLR	Ocean Science in Relation to Living Resources
OSNLR	Ocean Science in Relation to the Non-Living Resources
PSCA	Office of Legal Affairs Political and Security Council Affairs
RODAC	Regional Ocean Dumping Advisory Committee
RNODC	Responsible National Oceanographic Data Centre
SARP	Sardine-Anchovy Recruitment Programme
SCAR	Scientific Committee on Anartic Research
SCOPE	Scientific Committee on Problems of the Environment

SCOR	Scientific Committee on Oceanic Research
SOLAS	International Convention on the Safety of Life at Sea
TAC	Total Allowable Catch
TEMA	Training, Education and Mutual Assistance
TOGA	Tropical Ocean and Global Atmosphere
TOWD	Special Committed on Toxic Waste Disposal
UN	United Nations
UNCLS	Office of the Special Representation for the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
WCRP	World Climate Research Programme
WDC	World Data Centre
WESTPAC	IOC Programme Group for the Western Pacific
WHO	World Health Organization
WMO	World Meterorological Organization
WOCE	World Ocean Circulation Experiment
WWW	World Weather Watch

INTERNATIONAL SCIENTIFIC AFFAIRS RELATIONSHIPS OF THE DEPARTMENT OF FISHERIES AND OCEANS

APPENDIX I. SUBSIDIARY BODIES OF THE IOC

Appendix 1
Subsidiary Bodies of the IOC

Working Committee

IODE - International Oceanographic Data Exchange

IGOSS - Integrated Global Ocean Service System (with WMO)

GIPME - Global Investigation of Pollution in the Marine Environment

TEMA - Training Education and Mutual Assistance

CCCO - SCOR/IOC Committee on Climatic Changes and the Ocean

Regional Bodies

IOCARIBE - Sub-Commission for the Caribbean and Adjacent Regions

IOCSOC - IOC Programme Group for the Southern Ocean

WESTPAC - IOC Programme Group for the Western Pacific

IOCINCWIO - IOC Programme Group for the Cooperative Investigations in the North and Central Western Indian Ocean

IOCINDIO - IOC Programme Group for the Central Indian Ocean

IOCEA - IOC Programme Group for the Central Eastern Atlantic

ITSU - IOC Tsunami Warning System

Joint Groups of Experts

GEBCO - The Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans

OSLR - The Joint IOC-FAO Guiding Group of Experts on Ocean Science Related to the Living Resources

OSNLR - The Joint IOC-UN (OETB) Guiding Group of Experts on Ocean Science Related to the Non-Living Resources

GEMSI - The Joint IOC-UNEP Group of Experts on Methods, Standards and Intercalibration

THE WORKING COMMITTEE ON INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE

(IODE)

The machinery for the exchange of oceanographic data originated with the planning of the Internationl Geophysical Year (IGY) in 1957 and 1958, when a number of World Data Centres (WDC's) were established. The two oceanographic data centres established for oceanography were World Data Centre A, Washington, D.C. and World Data Centre B, Moscow, USSR. Data were submitted to these Centres from laboratories and institutions throughout the world. At the close of the IGY a decision was made that the Centres would remain active and the IOC was asked to provide the necessary functional guidance. As a consequence the Working Committee on IODE was established, made up of heads of national oceanographic data centres. Their task was of monumental proportions in that data sent to the World Data Centres was non-formatted or standardized by any accepted criteria. With considerable dilegence and assistance from the International Council for the Exploration of the Sea (ICES) formats, standards, and methodologies were adopted for the submission and retrieval of data so that basic data could be blended and merged into international and national files.

The IODE is the largest working committee in the IOC dealing with all forms of oceanographic data, bibliographic and related information services, development of methods for storage and retrieval of biological, geological and geophysical data, and development of standardized and/or computer compatible data formats.

The Working Committee has established the rules of procedure, standards and types of data that are now routinely exchanged on an international basis. Many other agreements have been promulgated to facilitate the sharing of processing methods and facilities through the designation of Responsible National Oceanographic Data Centres (RNODC) for certain types of data for specific areas of the ocean. The advantage of such a system to a member State is that it does not necessarily have to handle or process all oceanographic data of interest to it. It can frequently call upon an RNODC to obtain data already processed and in computer compatible form. This avoids considerable expense and duplication of effort with several member States processing copies of the same files. RNODCs exist for marine pollution data, drifting buoys, IGOSS data, wave observations observations, data formats, mean sea level, etc., and for certain designated ocean areas and international experiments.

The traditional IODE role in handling data of a non-real time nature is changing with the requirement to close the gap between operational ocean information services and interpretation of data to deal with processes having seasonal and interannual time scales. The best example of this is the WCRP which is seeking to predict climate change on a seasonal and interannual basis. The Working Committee is also currently addressing the problem of data management for observations from satelites and real time telecommunications systems. Much of these data must flow directly through the real time systems to the archives as they will not be available in the traditional forms. In addition these data must be integrated with the more traditional files and the resulting data sets must be provided rapidly to be useful to the user community.

Working Committee on the Integrated Global Services Program (IGOSS)

The Integrated Global Ocean Services System jointly sponsored with WMO, began when it was thought that a network of fixed observing stations spaced throughout the world's oceans would be needed to provide a time-series of ocean synotic observations. It was recognized that this ambitious objective could not be realized in the short term, but it served the purpose of focussing attention on real and near real time ocean services and the establishment of dedicated radio frenquencies for a multitude of oceanographic purposes.

The purpose of IGOSS is fundamentally to provide an ocean information service to users and the public paralleling some of the meteorological services. In order to achieve this objective the Working Committee has addressed the problems of:

i) developing codes and manuals, to allow for the timely exchange and archival of oceanographic data;

ii) establishing observing systems of surface and subsurface conditions in the ocean;

iii) ensuring that a viable telecommunications network is in place to enable data to be relayed from ship to shore and subsequently exchanged via the Global Telecommunications System (GTS);

iv) developing the infrastructure for the analyses and dissemination of oceanographic data in a timely manner, and in a format that is of most use to clients.

The machinery to accomplish the above is now well-established and was used to support amongst others the First GARP Global Experiment (FGGE), the global monitoring of marine petroleum pollutants and a sub-surface thermal structure pilot project for one of the Tropical Oceans and Global Atmospheric experiements in the study of world climate. The scales are such that the requirements for infrastructure support are global and hemispheric in character and require input from all member States of IOC. The scientific rationale for IGOSS is now in place and the IOC and WMO are in a unique postion to organize the essential intergovernmental support services.

Working Committee for the Global Investigation of Pollution in the Marine Environment (GIPME)

The Working Committee for the Global Investigations of Pollution in the Marine Environment was established in 1976 taking over from an International Coordination Group (ICG) composed of scientists appointed by IOC member States and UN bodies. In the short time this ICG existed, it submitted to the Commission a Comprehensive Plan for the Global Investigation of Pollution in the Marine Environment which has served ever since as the basis for the GIPME programme.

The Plan addressed four major stages:

a) the development and proving of methods

b) the acquisition of data on the distribution of contaminants in the marine environment (MARPOLMON) and the determination of mass-balances;

c) an assesment of the state of contamination of the marine environment; and

d) the assement of the extent of deletrious effects on marine ecosystems of individual contaminants.

In order to undertake these tasks a number of expert groups were established most notably, the Group of Experts on Methods, Standards and Intercalibration (GEMSI). GEMSI is involved in the developing and testing methods for both the acquisition of baseline data on the distribution of contaminant chemicals in the marine environment and in spatial and temporal trend monitoring. The focus of this work has been, on chemical species, trace metels, petroleum-derived hydrocarbons and organohalogen compounds.

GIPME assumed responsibility for MAPMOPP, the IOC/WMO Marine Pollution Monitoring Pilot Project, which was organized as a global marine pollution monitoring programme for the visual detection of oil slicks, other floating pollutants, collection of tar balls, and the measurement of disolved/ dispersed petroleum residues. During the project almost 100,000 visual observations of floating slicks were made, along with a collection of 5,000 samples of floating tar, 3,000 samples from the water column, and 3,500 samples of tar from beaches. The experiment was able to provide for the first time, a quantifiable assessment of the distribution of the various forms of oil in the ocean environment on a global scale.

GIPME is not a programme being run by the IOC in isolation of other marine pollution studies, through a new Group of Experts on the Effects of Pollutants (GEEP) it will be examining the effects of pollutants on marine organisms at various levels in the marine ecosystem. To complement this work a joint ICES/IOC group has been established to assess the incidence of diseases in marine mammals in relation to organochlorine contamination.

Working Committee on Training, Education and Mutual Assistance (TEMA)

From the very beginning of the IOC, training and education has been a priority for some member States in view of the very different stages of development of marine science throughout the world.

At no time however, has the IOC ever obtained sufficient funding to maintain an effective programme. To some extent the problem has been alleviated through the much larger programmes of assistance provided by the Marine Sciences Division of UNESCO which administers a wide range of training and educational programmes including fellowships and scholarships to students and direct financial support of marine institutions.

Although the IOC has struggled with this problem for many years it has not yet found a totally satisfactory answer. The real needs of many developing countries are local or regional and not open-ocean or global in scope. Hence the developing countries are noticeably absent from the Commission's major global programmes which account for the lion's share of IOC resources. In order to overcome this situation the IOC is attempting to put in place ocean sciences programmes related to the living and non-living resources on the continental shelves where there is a better likehood of achieving economic benefits in the short run. Training and assistance, for GIPME for example have been well received by the developing countries particularly for their participation in the Regional Seas Programmes of the United Nations Environment Programme.

In general when the TEMA activities have been associated with relevant programmes of UNESCO, FAO or UNEP the results have been much more satisfactory.

SCOR-IOC Committee on Climatic Changes and the Ocean (CCCO)

The CCCO is not a Working Committee of the IOC, but it is one that fits the global definition in a very unique and significant way. In response to the worldwide study on climate and climate related changes identified in the World Climate Research Programme, SCOR initiated a Committee on Climatic Changes and the Ocean composed of leading experts and representatives from SCOR Working Groups and other bodies whose activities were relevant to climate problems. The IOC was quick to respond and co-sponsor the CCCO. Since 1979, when the IOC became involved, climate studies have emerged as perhaps the most important scientific undertaking ever considered by the IOC. It is truly of intergovernmental dimensions, global and regional in character, and provides a rationale for unifying the subsidiary bodies on a common theme.

The work of the CCCO is handled by five working panels. One panel is charged with the responsibility of maintaining collaboration and cooperation with the Joint Scientific Committee for the World Climate Research Program known as the CCCO-JSC Liaison Panel. A second panel is examining sea ice variations which provide one of the strongest signals of variations in climate. A third panel is examining the relationships between climate and ecology and the importance of variations of ocean climate on fish location, size, and the abundance of fish populations. A fourth panel is covering palaeoclimatology and is looking at year by year variations of past conditions from sediments, corals and large molluscs. A fifth panel (The Modelling and Theory Panel) is dealing with ocean and atmospheric models including coupled models of the ocean and atmosphere.

The ocean climate studies initiated by SCOR and the IOC have led to a number of carefully designed programmes and study groups. Three tropical ocean climate study panels have been created for the Atlantic, Pacific and Indian Oceans, a JSC-CCCO Tropical Ocean and Global Atmosphere Scientific Steering Group (TOGA) responsible for developing a programme of both observation and theory for the modelling of the interannual variability of the tropical ocean and the atmosphere. A JSC-CCCO World Ocean Circulation Experiment Scientific Group (WOCE) for determining the circulation of the global ocean. Other bodies are the JSC-CCCO Working Group on Satellite Observing Systems for Climate Research, the Ocean Observing System Development Programme Group, the Carbon Dioxide Advisory Panel, and an Oceanographic Data Group.

The importance being placed on ocean climate studies is reflected by the realization of individual scientists, institutions and governments throughout the world that no country can afford to ignore the impact of climate change on such human activities as cereal grain production, energy consumption and water consumption.

Regional Subsidiary Bodies

The IOC Programme Group for the Western Pacific (WESTPAC) and the Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE), are successors to major regional cooperative investigations, namely, the Cooperative Study of the Kuroshio and Adjacent Regions (CSK) 1965-1977 which gave rise to WESTPAC and the Cooperative Investigations of the Caribbean (CICAR) 1967-1976 which brought about the establishment of IOCARIBE. There is no essential difference in the nature of the work of these two bodies; the term Sub-Commission came about for political reasons.

Other regional bodies have been formed to facilitate research, foster cooperative undertakings or simply to provide a venue for discussions. The developing countries on the whole, however, view regional bodies as an important step forward and a venue for focussing attention on regional oceanographic problems.

Unfortunately, the funding support for regional bodies is such that survival is a problem without the strong and direct support of a major developed country such as the case of Japan and Australia in WESTPAC and the USA in IOCARIBE. As a result, the other regional programmes adjacent to Africa and the Indian sub-continent are struggling.

Despite the uncertainty and doubts of the future viability of some of the regional bodies, most if nearly not all member States would continue to support their existence in order to broaden participation in oceanographic programmes and serve as important regional delivery systems for training, education and mutual assistance.

Tsunami Warning System in the Pacific

The IOC Tsunami Warning System in the Pacific (ITSU) began originally as a U.S. warning system in 1948. When it was proposed that the system be incorporated into the IOC it was expanded to provide a tsunami warning system for the whole Pacific region. Today there are 20 participating member States with seismological and tidal stations.

The ITSU group provides a means of liaison amongst tsunami affected States to lessen the loss of life and property by combining national systems and networks into one. An International Tsunami Information Centre (ITIC) has been set up in Honolulu, Hawaii to monitor reports and issue warnings to national and regional centres. The International Coordination Group works towards refining and improving the watch and warning procedures with the goal of achieving confirmation of a tsunami from the nearest tide gauge station within one hour of a seismic event. It also has provided instruction and training to developing countries on the organizational requirements to cope with the potential dangers of a tsunami.

Ocean Science in Relation to Living Resources (OSLR)

An intensive review and evaluation of the needs of developing member States for marine scientific research was conducted by the IOC after the Law of the Sea deliberations to determine the highest priority needs of these countries. Of those needs identified, ocean science in relation to the living resources and non-living resources emerged as the most crucial.

The concept of an OSLR program was presented to SCOR and FAO for joint sponsorship and now both bodies are designing the fundamental requirements of the programme. The purpose of the OSLR program is to provide the scientific support for effective resource conservation and management with particular attention being placed on the propagation, survival, and growth of the living resources.

A SCOR/ACMRR working group has been set up to look at the question of recruitment as the starting point for the programme. DFO launched the study with the organization of a workshop on low-diversity ecosystems which has now been followed up by a Sardine-Anchovy Recruitment Project (SARP) for the Peru current region. Three additional boundary current systems, the California, Canary and Benguela will be examined.

Other OSLR projects will address the tropical regions of the world, where less is known about both the fisheries and the marine environment compared with northern waters. The objective of the goal is to examine the high diversity species of the tropics which are the most difficult to deal with but the most important to developing countries.

Ocean Science in Relation to the Non-living Resources (OSNLR)

OSNLR like OSLR is a new IOC initiative, intended principally to assist developing member States in acquiring the geological/geophysical knowledge required to explore their non-living resources. The work is being undertaken in collaboration with the UN Office of Ocean Economics and Technology Branch (OETB). The programme was requested by developing countries following the Third Law of the Sea Conference in anticipation of achieving an economic return from their newly acquired economic zones. The concept of the programme was laid out by the Commission for Marine Geology (CMG) of the International Union of Geological Sciences at the request of the IOC and with the support of the Marine Sciences Division of UNESCO. A Guiding Group of experts has been established jointly with OETB to develop and implement the programme.

The OSNLR programme is looking at the near shore zones in the first instance and will cover the continental shelves and margins as required. Current activities are focussing on the regional capabilities and technologies for extraction of inorganic minerals, aggragates and hydrocarbons.

Although there is general interest in polymetallic nodules phosphorite, metalliferous muds and sulphide deposits in the ocean OSLNR is concentrating its attention on the more practical and immediate problems of how to assist developing countries in improving their capability to work in shallow water geological environments.

Ocean Mapping

The IOC in association with the International Hydrographic Organization (IHO) established a Guiding Committee for a new edition of the Global Bathymetric Chart of the Ocean (GEBCO). This Committee group provided the scientific guidance for the fifth edition of the chart which Canada played a singularly important role in the finalization, printing and production of the 18 sheets which make up the chart. GEBCO represents one of the most authoritative sources of information on seafloor morphology, terminology and nomenclature that has been produced to date.

Although the fifth edition is complete the Guiding Committee serves as the recognized international authority for the production of all regional bathymetric charts. A number of which are to be produced for the Mediterrenean, Caribbean, Central Eastern Atlantic and Western Indian Ocean regions.

The ocean mapping functions of the IOC have led to a number of very meaningful working relationships with national charting authorities around the world to whom the IOC provides guidance on nomenclature, developments in digital bathymetry and technical aspects relating to the Law of the Sea Treaty and its applications to baseline configurations and extended economic zones.

APPENDIX II. IMO CONVENTIONS AND CODES

Appendix II

International Maritime Organization Conventions

Safety

International Convention for the Safety of Life at Sea, 1960 (SOLAS)

International Convention for the Safety of Life at Sea, 1974 (SOLAS)

International Convention on Load Lines, 1966 (LL)

International Convention on Tonnage Measurement of Ships, 1969 (TM)

Special Trade Passenger Ships Agreement, 1971 (STP)

Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREG)

International Convention for Safe Containers, 1972 (CSC)

Convention on the International Maritime Satellite Organization (INMARSAT) and Operating Agreement, 1976

Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (SFV)

International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW)

International Convention on Maritme Search and Rescue, 1979 (SAR)

Preventing Marine Pollution

International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (OILPOL)

International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969 (CSI)

Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (LDC)

International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978, (MARPOL)

Liability and Compensation

International Convention on Civil Liability for Oil Pollution Damage, 1969 (CLC)

Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, 1971 (LNM)

International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971 (IFC)

Athens Convention Relating to the Carriage of Passengers and Their Luggage by Sea, 1974 (PAL)

Convention on Limitation of Liability for Maritime Claims, 1976 (LLMC)

Other Matters

Convention on Facilitation of International Maritime Traffic, 1965 (FAL)

ANNEX II

International Maritime Organization Conventions

Codes and Recommendations

International Maritime Dangerous Goods Code (IMDG), (first adopted in 1965);
Code of Safe Practice for Bulk Cargoe (1965);

International Code of Signals (All functions in respect of the Code were assumed by the Organization in 1965);

Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (1971);

Code of Safe Practice for Ships Carrying Timber Deck Cargoes (1973);

Code of Safety for Fishermen and Fishing Vessels (1974);

Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk (1975);

Code for Existing Ships Carrying Liquified Gases in Bulk (1976);

Code of Safety for Dynamically Supported Craft (1977);

Code for the Construction and Equipment of Mobile Offshore Drilling Units (1979);

Code on Noise Levels on Board Ships (1981);

Code of Safety for Nuclear Merchant Ships (1981);

Code of Safety for Special Purpose Ships (1983);

International Gas Carrier Code (1983);

International Bulk Chemicals Code (1983);

Code of Safety for Diving Systems (1983).

APPENDIX III. GESAMP PUBLICATIONS

APPENDIX III
GESAMP PUBLICATIONS

Rep. & Stud. No.	Title	Date	Language
1.	Report of the Seventh Session	1975	E, F, R, S
2.	Review of Harmful Substances	1976	E
3.	Scientific Criteria for the Selection of Sites for Dumping Wastes into the Sea	1975	E, F, R, S
4.	Report of the Eight Session	1976	E, F, R
5.	Principles for Developing Coastal Water Quality Criteria	1976	E
6.	Impact of Oil on the Marine Environment	1976	E
7.	Scientific Aspects of Pollution Arising from the Exploration and Exploitation of the Sea-bed	1977	E
8.	Report of the Ninth Session	1977	E, F, R
9.	Report of the Tenth Session	1978	E, F, R, S
10.	Report of the Eleventh Session	1980	E, F, S
11.	Marine Pollution Implications of Coastal Area Development	1980	E
12.	Monitoring Biological Variables related to Marine Pollution	1980	E, R
13.	Interchange of Pollutants between the Atmosphere and the Oceans	1980	E
14.	Report of the Twelfth Session	1981	E, F, R
15.	The Review of the Health of the Oceans	1982	E
16.	Scientific Criteria for the Selection of Waste Disposal Sites at Sea	1982	E
17.	The Evaluation of Hazards of Harmful Susbtances Carried by Ships	1982	E

APPENDIX III - cont.
GESMAP PUBLICATIONS

Rep. & Stud. No.	Title	Date	Language
18.	Report of the Thirteenth Session	1983	E, F, S
19.	An Oceanographic Model for the Dispersion of Wastes Disposed of in the Deep Sea	1983	E
20.	Marine Pollution Implications of Ocean Energy Development	1984	E
21.	Report of the Fourteenth Session	1984	E, F, S
22.	Review of Potentially Harmful Substances - Cadmium, Lead and Tin	1985	E
23.	Interchange of Pollutants Between the Atmosphere and the Oceans	1985	E
24.	Thermal Discharges in the Marine Environment	1985	E
25.	Report of the Fifteenth Session	1985	E, F, S, R
26.	Atmospheric Transport of Contaminants into the Mediterranean Region	1986	E
27.	Report of the Sixteenth Session	1986	E (F, S, R in preparation)
28.	Review of Potentially Harmful Susbtances - Arsenic, Mercury and Selenium	(in preparation)	
29.	Review of Potentially Harmful Substances - Organosilicon Compounds (Silanes and Siloxanes)	(in preparation)	
30.	Environmental Capacity - An approach to Marine Pollution Prevention	(in preparation)	

APPENDIX IV. PAST AND PRESENT SCOR WORKING GROUPS

APPENDIX IV

SCOR WORKING GROUPS
(Past and Present)

WG 1	Radioactivity in the Ocean
WG 2	Carbon Dioxide in the Ocean
WG 3	Measurements of the Productivity of the Sea and of the Standing Crops of Phytoplankton and Zooplankton (renamed Biological Production of the Sea).
WG 4	Physical Properties of Sea Water
WG 5	International Indian Ocean Expedition sub-groups
WG 6	Chemical Oceanography
WG 7	World Data Centres
WG 8	Radio-aids to Navigation
WG 9	Fisheries Oceanography
WG 10	Oceanographic Tables and Standards (reconstituted as Joint Panel on Oceanographic Tables and Standards)
WG 11	Atlases
WG 12	Abstracts and Bibliographies
WG 13	Zooplankton Sampling Methods
WG 14	General Scientific Framework
WG 15	Photosynthetic Radiant Energy
WG 16	General Problems of Intercalibration and Standardization
WG 17	Determination of Photosynthetic Pigments
WG 18	Biological Data
WG 19	Micropalaeontology of Bottom Sediments
WG 20	Radio Carbon Estimation of Primary Production
WG 21	Continuous Current Velocity Measurements
WG 22	Marine Pollution
WG 23	Zooplankton Laboratory Methods

WG 24	Estimation of Primary Production under Special Conditions
WG 25	Nutrient Chemistry
WG 26	Implementation of UN Resolution on Resources of the Sea
WG 27	Tides of the Open Sea
WG 28	Air-Sea Interaction
WG 29	Monitoring in Biological Oceanography
WG 30	Scientific Aspects of International Ocean Research
WG 31	East Atlantic Continental Margins
WG 32	Biological Data Inventories
WG 33	Phytoplankton Methods
WG 34	Internal Dynamics of the Ocean (formerly Oceanographic Basis of Ocean Monitoring and Prediction Systems)
WG 35	Methods of Quantitative Ecology of Coral Reefs
WG 36	Coastal Upwelling Processes
WG 37	Marine Plankton and Sediments
WG 38	Ocean Process in the Antarctic (formerly Special Studies on Circumpolar Waters South of 40°S)
WG 39	Scientific Investigation of Pollution in the Marine Environment
WG 40	Palaeo-Oceanography
WG 41	Morphological Mapping of the Ocean Floor
WG 42 *	Pollution of the Baltic
WG 43	Oceanography Related to GATE
WG 44	Ocean-Atmosphere Materials Exchange
WG 45	Marine Pollution Research
WG 46	River Inputs to Ocean Systems
WG 47	Oceanographic Programmes During FGGE
WG 48	The Influence of the Ocean on Climate

WG 49 Mathematical Modelling of Oceanic Processes

WG 50 Biological Effects of Ocean Variability

WG 51 Evaluation of CTD Data

WG 52 Estimation of Micro-Nekton Abundance

WG 53 Evolution of the South Atlantic

WG 54 * Southern Ocean Ecosystems and their Living Resources (formerly Living Resources of the Southern Oceans)

WG 55 Prediction of El Nino

WG 56 * Equatorial Upwelling Processes

WG 57 Coastal and Estuarine Regimes

WG 58 Arctic Ocean Heat Budget

WG 59 Mathematical Models in Biological Oceanography

WG 60 Mangrove Ecosystems

WG 61 Sedimentation Processes at Continental Margins

WG 62 Carbon Budget of the Ocean

WG 63 Marine Geochronological Methods

WG 64 Ocean Atoll Drilling

WG 65 * Coastal Offshore Ecosystems Relationships

WG 66 * Oceanographic Applications of Drifting Buoys

WG 67 Oceanograhy, Marine Ecology and Living Resources

WG 68 * North Atlantic Circulation

WG 69 * Small Scale Turbulence and Mixing in the Ocean

WG 70 * Remote Measurement of the Oceans from Satellites

WG 71 * Particulate Biogeochemical Processes

WG 72 * The Ocean as a Source and Sink for Atmospheric Constituents (formerly WG 44)

WG 73 * Ecological Theory in Relation to Biological Oceanography (formerly WG 59)

WG 74 * General Circulation of the Southern Ocean

WG 75 * Methodology for Oceanic CO_2 Measurements

WG 76 * Ecology of the Deep Sea Floor

WG 77 * Laboratory Tests Related to Basic Physical Measurements at Sea

WG 78 * Determination of Photosynthetic Pigments in Seawater

WG 79 * Geological Variations in Carbon Dioxide and the Carbon Cycle

WG 80 * Effects of Hydrothermal Processes in the Ocean

WG 81 * Deep Water Palaeo-Oceanography

WG 82 * Polar Deep Sea Palaeoenvironments

JPOTS * Joint Panel on Oceanographic Tables and Standards (formerly WG 10)

CCCO * Committee on Climatic Changes and the Ocean

* Active Groups, June 1985.

APPENDIX V. SUBJECT/AREA COMMITTEES OF ICES

APPENDIX V
SUBJECT/AREA COMMITTEES OF ICES

The Fish Capture Committee

The Fish Capture Committee addresses fish detection and searching techniques, design and operation of fishing gear, and of behaviour of fish in relation to fishing operations.

The Committee has been at the forefront of numerous technological developments ranging from evaluation of gear, standards settings, and the impact of offshore oil and gas developments, pipelines, and submerged cables on fishing operations. Its work is strongly applications oriented and serves as a key forum in technology transfer and innovative experimentation which has included, shrimp sorting trawls,trawl net drag trials, model testing, selectivity of gear, echo sounding and fish behaviour to name only a few subjects that have been addressed.

The Committee is served by a number of Working Groups namely:

- The Fishing Technology and Fish Behaviour Working Group.
- The Working Group on Data Collection and Processing in Fish Capture and Research.
- The Working Group on Standardization of Scientific Methods for Comparing Catching Performance of Different Fishing Gear.
- A Fisheries Acoustics Science and Technology Working Group.

The Committee has been active in promoting and organizing theme sessions and mini-symposia; a few representative titles are listed below to indicate the scope of this activity.

Theme Sessions

- Gear selectivity
- Acoustic methods
- Catching process of stationary fishing gear
- International and national acoustic survey methods and procedures, and the associated problems of the conversion of data into biomass estimates
- Energy consideration in fish locomotion and in fish capture processes
- Engineering and fish reaction aspects in low energy consumption fishing methods

The Hydrography Committee

The Hydrography Committee is one of the original Committees set up by ICES when it was established in 1902. Its prestige and recognition world wide is an outgrowth of its early beginning when the Central Bureau decided that when the General Secretary represented the hydrographical sciences, one of the principal assistants should be a biologist or vice versa. As it turned out the first General Secretary was a biologist and the first hydrographer appointed was Martin Knudsen, one of the early pioneers in physical oceanography. At that time he headed the Service Hydrographique

The Service Hydrographique served as the one of the principal international focal points for oceanography until well after World War II. Its reputation was built on its data files, the publication of the Bulletin Hydrographique, and the Standard Seawater Service which included the international standardization of nomenclature and units used for seawater analyses. It was only natural that SCOR, IOC and other international bodies turned to ICES for the coordination and assessment of new methodologies for salinity determinations.

Although much of the attention in the early days dealt with the oceanography of the Baltic and North Sea for fisheries purposes, the ICES oceanographic data centre collections for the Atlantic Ocean were regarded as the international standard of quality control for the International Geophysical Year and subsequent Polar Front and Overflow Programmes conducted by ICES in the North Atlantic. The make up of the Hydrography Committee ensures that physical and chemical oceanographic studies cover shallow seas, continental shelves and estuaries where some of the latest technological advances in instrumentation have been tested and evaluated.

The Committee and its working Groups are viewed as extensions of SCOR and IOC working bodies and thus its expertise and work extends far beyond the country membership of ICES.

The Working Groups of the Hydrography Committee are:

Working Group on the Coordination of Hydrographic Investigations in the Baltic.
Working Group on Marine Chemistry.
Working Group on Marine Data Management
Working Group on Shelf Seas Hydrography
Remote Sensing Working Group
ICES/SCOR Working Group on Ocean Circulation

Some of the theme subjects or joint sessions listed below serve to illustrate the field of interests of the Hydrography Committee.

North Sea-Baltic hydrographical studies
Mini-Symposium on the Mid 1970's Anomaly
Physical and chemical Fluxes
Mini-symposium on climatic variations in the North Atlantic and their effects on biota and fisheries
Mini-symposium on applications of aerospace remote sensing in marine research
Mini-symposium on transport processess in estuaries and near Shore Zones
Open ocean meso-scale and slope edge processes
North Altantic circulation with special reference to long-time series of observations
Shelf sea fronts
The interaction of physical, chemical and biological processes

The Statistics Committee

The importance placed on statistical fisheries information in ICES by member Countries stems from an early stipulation that one of the staff assistants must be experienced in statistics. The first ICES publication of fisheries statistics was issued as the Bulletin Statistique published in 1906. The series has been continued ever since and is now handled by the ICES Statistician who serves also as the secretary of the Statistics Committee.

The Statistics Committee keeps under review, the arrangements for the collection, treatment and publication of statistics required for the work of the Council or its Committees and other international organizations. All the fisheries Committees of ICES work in conjunction with the Statistics Committee in identifying and harmonizing the submissions or requirements of member Countries for fishing effort data, abundance, value of landings, and other relevant information.

The Committee cooperates with NAFO and FAO on the rationalization of statistical data to achieve common and intercomparable data. The Committee Chairman and the Council's Statistician serve as the ICES representatives on the Coordinating Working Party (CWP) of FAO on fisheries data.

The Committee is served by the following Working Groups:
Working Group on Automatic Data Processing Matters
Statistical Committee Liaison Working Group

Coordinating Working Party for Atlantic Fishery Statistics with FAO, NAFO, ICCAT, ICSEAF, EUROSTAT, OECD and CCAMLR.

Theme subjects or joint sessions which have been sponsored by the Committee are:

Statistical problems in the design of surveys and trend monitoring
Statistics in relation to environmental problems
Time series and trend analysis from the viewpoint of oceanographers, environmentalists, fishery biologists and fishery economists.
Statistical theory employed in stock assessment and environmental studies
Precision estimate applied to stock assessments and TAC's
Fish stock assessment computer programme packages.

Marine Environmental Quality Committee

The Marine Environmental Quality Committee was established in 1978 as an outgrowth of the Fisheries Improvement Committee which had established Working Groups and Sub-Groups on Marine Pollution to deal with the health of the living resources and biological effects monitoring.

The Committee considers its role as one of dealing with the scientific study of man-made impacts which has led to an examination of a wide range of problems and issues associated with mining, ocean dumping and oil pollution. It has set programmes in place to monitor biological effects of pollution, metals and organochlorine residues in marine organisms, and intercalibration comparison of sampling and analytical methods.

Matters concerning the introduction of non-indigenous marine organisms also fall under the purview of the Marine Environmental Quality Committee. The Committee has been active in its support for the need of protocols and of quarantine and inspection facilities in member Countries.

The Committee is served by the following Working Groups:

ICES/SCOR Working Group on the Study of Pollution in the Baltic
Working Group on Pollution Related Studies in the Skagerak and Kattegat
Study Group on Patchiness Investigations in the Baltic Sea
Study Group on Biological Effects Monitoring
Working Group on Marine Sediments in Relation to Pollution
Working Group on Marine Pollution Baseline and Monitoring Studies
Working Group on the Effects of Extraction of Marine Sediments
Working Group on Exceptional Algal Blooms

Some of the theme subjects sponsored by the Committee are the following:

Recent developments in the application of statistics to marine environmental problems
Water quality in regard to mariculture
Plankton blooms, their causes and their effects on the fisheries and ecosystems
The biological effects of pollution including the relationship between pollution and diseases in marine organisms
Environmental quality in coastal and estuarine systems
Biological effects of the marine dumping of dredge spoils, sewage sludge and other waste materials
The effects of contaminants on reproduction of fish and shellfish

Biological Oceanography Committee

The Biological Oceanography Committee was created in 1977 from its predecessor the Plankton Committee, essentially its new terms of reference place more emphasis on benthic studies, general ecosystem investigations and food chain dynamics than previously.

The subjects which the Committee follows on a regular basis include studies on primary and secondary production, general, experimental and methodological studies on sampling variability, predator/prey relationships, benthic fauna, and plankton ecology in relation to fish stock assessment studies.

Some of the new technological applications of remote sensing, in situ measurements of biomass and biochemical methodologies have been reviewed and assessed for improving biological sampling techniques.

The recent outbreaks of algal blooms in European waters and closure of some fisheries has caused the Committee to focus more attention on an examination of biological, physical and chemical factors associated with such outbreaks. The issue is of such importance that special Plankton Sheets on the taxonomy of the phytoplankton are being produced for rapid and precise identification of the organisms.

The Committee is served by the following Working Groups:

Benthos Ecology Working Group
Working Group on Exceptional Algal Blooms
Working Group on Primary Production

Theme topics presented by the Committee are:

Mini-symposium on closed experimental systems
Plankton blooms, their causes and their effects on the fisheries and ecosystems.
Trophic interactions between predator and prey in the plankton and benthos.

The Mariculture Committee

The Mariculture Committee reviews and coordinates investigations relating to the culture of marine organisms including transplantation and introduction of new species. It is a rather specialized body of ICES in that its work covers both freshwater and saltwater rearing operations for trout, salmon, shellfish, molluscs and flatfish. The Committee amalgamates the functions of the former Shellfish and Benthos Committee and the Fisheries Improvement Committee.

The Committee has had to deal with a number of contentious issues on mariculture most notably a number of unsubstantiated claims of fish production projections from mariculture operators seeking public support and investment. As a result, the Committee has had to address in a very methodical manner the biological, legal, economic engineering and ecological problems related to such undertakings. Its scientific interests include research on disease and disease outbreaks and control, genetics, nutrition, growth rates and maturity.

The Committee has set up the following Working Groups:

Working Group on Pathology and Diseases of Marine Organisms;
Working Group on the Introduction and Transfers of Marine Organisms;
Working Group on Genetics;

Special topics or themes organized by the Committee include the following:

Environmental aspects of fish and shellfish culture.
Fish behaviour studies under controlled conditions in mariculture experiments and culture practice.
Evaluations of the factors (biological, economic, social and legal) governing the sea-ranching and sea-farming of salmonids.
Ecological impact of mariculture operations on the adjacent environment.
Biological and technological evaluation of mariculture projects.
Further developments in vaccine programmes.
Optimization of technical design of culture systems and scaling up of pilot projects for mariculture.
Impact of heredity on mariculture species.
Studies on bioenergetics in mariculture species.

The Fisheries Committees of ICES

The Desmersal Fish Committee

As an outgrowth of the Desmersal Fish (Northern) Committee and the Desmersal Fish (Southern) Committee, the Desmersal Fish Committee is presently concerned with the management and assessment of desmersal fish stocks for the Northeast Atlantic area. Some 11 assessment working groups collectively handle all the commerical fish species involved. Singled out for special attention are the North Sea, Irish Sea, Faroes Islands area, and Barents Sea. This Committee serves as a key source of scientific advice provided to NEAFO and in view of this function it also maintains a close working relationship with the counterpart groups in NAFO.

Scientifically the Committee covers all aspects of the biology of the fisheries but especially on egg and larval stages for estimates of recruitment potential, stock identification, age determination and mathematical modelling.

The Working Groups that serve under this Committee are:

North-East Arctic Fisheries Working Group
Working Group on Fish Stocks of the Faroes
The Saithe (Coalfish) Working Group
Working Group on Redfish and Greenland Halibut
The Irish Sea and Bristol Channel Working Group
The North Sea Roundfish Working Group
The North Sea Flatfish Working Group
Working Group on Norway Pout and Sandeel
The 0-Group, Flatfish Working Group
Working Group on Assessment of Hake Stocks
The Working Group on International 0-Group Gadoid

Theme subjects and special topics considered by this Committee are:

*Changes of biological parameters in relation to fish stock abundance.
*The design and analysis of trout surveys.
*International and national acoustic survey methods and procedures.
*The use of fishing effort data in assessment and management.
*Food and feeding studies of fish in relation to multi-species assessments.
*Changes of biological parameters in relation to fish stock abundance.

* Themes common to the Desmersal, Pelagic and Baltic Fish Committees.

The Pelagic Fish Committee

The Pelagic Fish Committee was established in 1977 by combining the Pelagic Fish (Northern) and the Pelagic Fish (Southern) Committees. This Committee and its predecessors have maintained a consistent and sustaining interest in herring and sardines and has successfully coordinated a number of major surveys and studies on herring and sardine abundance, distribution, population dynamics, egg and larval distribution and mortality, some of which have included the evaluation of acoustic techniques.

In view of the interrelationships of the stocks and common problems, this Committee often meets jointly with the Desmersal Fish Committee and Biological Oceanographic Committee on species interactions and food studies.

The Committee is served by the following groups covering off assessments and survey plans:

Herring Assessment Working Group for the Area South of 62°N
Blue Whiting Assessment Working Group
Mackerel Working Group
Atlanto-Scandian Herring and Capelin Working Group
Herring Acoustic Survey Planning Group
Working Group for the Appraisal of Sardine Stocks
Herring Tagging Project Planning Group
Planning Group on ICES - coordinated Herring and Sprat Acoustic Surveys
Blue Whiting Planning Group for Coordinated Acoustic Survey
Industrial Fisheries Working Group
Working Group on Methods of Fish Stock Assessments
Working Group on North Sea Young Herring Surveys
Working Group on Herring Larval Surveys South of 62°N

Recent theme topics presented at ICES sessions are:

Acoustic methods
Stock assessment methods
Fish survey methods
Distribution and abundance in relation to environment
Biology of sprat in relation to stock separation and distribution
Changes of biological parameters in relation to fish stock abundance
The design and analysis of trawl surveys
International and national acoustic survey methods and procedures
Changes of biological parameters in relation to fish stock abundance.
Food and feeding studies of fish in relation to multi-species assessments.
Methods of stock abundance estimation independent of fishery data and their applications.