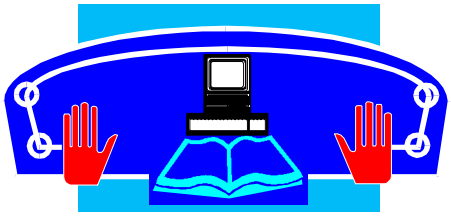

Arctic Development

The Ice Goes Out: A Policy Proposal For The Conservation And Management Of The Fish And Marine Mammal Resources Of The

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SUMMARY

The Central and Arctic Region of the Department of Fisheries and Oceans (DFO) is responsible for the conservation and management of the fish and marine mammals, and their habitats, of the Northwest Territories, the North Slope of the Yukon Territory, the offshore territorial waters and the tidal waters of Manitoba and Ontario. This discussion paper is the first step in developing a comprehensive framework for conserving and managing these resources and providing services to those who use and enjoy them. Further development of the proposal will require consultation with DFO's clients, the people who use or enjoy these resources, others who may be affected by conservation and management actions, other federal government departments, and the territorial governments. This consultation will take place over the next four months.

In addition to this discussion paper, management of Arctic fish and marine mammal resources will be affected by several other initiatives including the Arctic Marine Conservation Strategy (AMCS) and Northern Land Use Planning. The proposed management system would implement the fishery management principles set out in the AMCS. It supports Northern Land Use Planning as the major process for achieving integrated resource use planning.

The proposed objective of DFO for managing the fish and marine mammal resources of the NWT and Yukon North Slope is:

> **To conserve Arctic fish and marine mammal resources, enhance the net value of the economic and social benefits received by Canadians from these resources, and provide for the equitable distribution of benefits.**

By proposing this objective DFO is making a commitment to efficient and fair management of the resource.

The proposed policy adopts a pro-active approach to managing fishery resources to generate a wide range of benefits for Canadians. Nine strategies for implementing this approach are proposed:

1. **predicting and measuring results of management actions,**
2. **involving resource users in decision making,**
3. **planning for fishery management,**
4. **coordinating fishery development programs,**
5. **research,**
6. **delegating freshwater administration to territorial governments,**
7. **integrating structures developed through land claims with the management regime,**
8. **integrating management of renewable and non-renewable resources, and**
9. **international cooperation.**

DFO proposes to measure a wide range of benefits which can flow from the use of the resource and to consider trade-offs among these benefits when management decisions are made. Five main types of benefits would be measured:

1. **conservation,**
2. **cultural ,**
3. **regional development,**
4. **employment, and**
5. **economic efficiency.**

The economic efficiency account would contain benefits and costs which can be measured in dollars, using either actual or estimated market values. Examples include the value of a commercial catch, the value of a recreational fishing experience, production costs such as labor and capital, government subsidies, and resource management costs. The other accounts would address social benefits which could be generated by the use of the resources.

This **multi-account planning framework** would be used to display predicted economic and social benefits in order to assist in the evaluation and ranking of management alternatives. The cost of achieving social benefits would be estimated by the reduction in economic efficiency from the management alternative which generates the largest net economic benefit. With this display of information, managers would be able to make informed decisions involving the trade-offs between benefits and on management program expenditures.

DFO proposes that management boards become an integral part of fisheries management within the Central and Arctic Region. All client groups whose interests might be affected by board decisions would be represented. The general public also would be represented. DFO would appoint officials as non-voting members. Voting or non-voting membership would be extended to other concerned government agencies, especially when discussions relate to their mandates or programs. Users of other resources that may be affected by fishery management decisions would be consulted either through representatives or through working arrangements between fishery management boards and other resource management boards.

Management boards would be the main place for communication between client groups and between clients and DFO or other government agencies. Decisions of management boards would be sent to the regional managers of government agencies who could then accept, reject or vary them after providing the board with written reasons for their actions. Dissenting minorities could submit minority reports.

In one sense the boards would be advisory, because the final decision making power would lie with the agencies and ultimately with the ministers. However, they would be an integral part of the management decision making process and would become the main instrument for evaluating management options and making plans, subject only to final approval by the agency management.

DFO proposes that management boards develop and recommend comprehensive fishery management plans for all management stocks. The plans would set out management goals and ways to attain those goals. They could include recommendations for government programs and operational guidelines for the actions of administrators. They eventually would address all aspects of fishery and fish and marine mammal habitat development, management, and protection. Component plans would include a fishing plan, a habitat plan, a research plan, a fish quality plan, a communications plan and a human resources development plan. The first task generally would be to develop fishing plans. Other component plans would be developed as required.

The development of Arctic fisheries involves several government agencies which promote economic and social development and the individuals, corporations, cooperatives and communities who are proponents of particular developments. DFO, the agency charged with management of the resource, has a responsibility to ensure that development activities are coordinated and contribute to enhancing net benefits from the resource over the long term.

New fisheries must contribute to the management objective. This requirement implies that developments be consistent with DFO's policies on safe harvesting levels, allocation, monitoring, inspection, and marketing. Planning for development must include consultation with all interested agencies and individuals.

Planning and management decisions for management and protection of fish and marine mammal stocks and their habitats must be based on scientific knowledge, information, and understanding. A broad program of investigatory activities including qualitative and quantitative assessments and surveys, desk analysis, experimental management and experimental research on fish and marine mammals and their habitats will provide the basic knowledge, data and understanding for planning, and decision-making. Local and industry knowledge and experience will form part of the inputs to the ongoing science process. Much of this input will come through the development of research plans by management boards. DFO will ensure high quality of scientific advice for Arctic resource management decisions through its advisory committees.

DFO recognizes and supports the government priority of devolving certain responsibilities to the territorial governments. DFO will seek agreements on the transfer of administration of non-anadromous freshwater fisheries to the governments of Yukon and the Northwest Territories.

Integration of management procedures and structures developed through land claim negotiations with DFO fisheries management structures is necessary if the spirit as well as the letter of land claim agreements is to be reflected in fishery management. Management boards may be established through the settlement of comprehensive land claims. Where this occurs the terms of the settlement regarding process would take precedence for matters within the board’s terms of reference under the settlement.

DFO will maintain and promote international cooperation on the conservation of Arctic fisheries resources and their habitat.

DFO will be an active participant in the development of an integrated resource management regime in the territories. DFO will take a particularly active role in the development of an integrated resource management process for marine areas, as outlined in the Arctic Marine Conservation Strategy. DFO considers Northern Land Use Planning to be an important step towards integrated resource use planning.

The proposal also contains descriptions of the various aspects of DFO's fish and marine mammal management and protection programs and programs to provide services to fisheries. Guidelines are suggested for the administration of the programs. It is hoped that discussion of these proposed guidelines will lead to a mutually agreed upon and understood set of rules for management of the resource and the delivery by DFO of programs and services that meet the needs of the Department’s clients.

A. INTRODUCTION

The Central and Arctic Region of the Department of Fisheries and Oceans (DFO) is charged with the management and protection of the fish resources of a vast area of the Canadian Arctic. The Region also is responsible for delivering services to the people who use or enjoy these resources through the Fish Inspection, Fishing Vessel Insurance, and Small Craft Harbours programs. Fish, as used here and defined in the Fisheries Act includes all life cycle stages of fish, marine mammals, crustaceans and shellfish. The geographic area of responsibility for the Region includes the Northwest Territories (NWT), the North S1 ope of the Yukon Territory, the tidal waters of Manitoba and Ontario, and with two exceptions, the offshore territorial waters. Fisheries management in coastal marine waters bordering Northern Quebec in James and Hudson Bays and Hudson Strait has been delegated to the Quebec Region of DFO. Fisheries management in offshore waters of Davis Strait and the eastern portion of Hudson Strait (NAFO areas O and 29 north of 60°N) are managed in conjunction with international agreements such as the Northwest Atlantic Fisheries Organization (NAFO) and the Newfoundland Region of DFO.

This proposal is the first step in developing a comprehensive framework for conserving and managing these resources and providing services to DFO's clients, the people those who use or enjoy them. Further development of the proposal will require consultation with DFO's clients, others who may be affected by conservation and management actions, other federal government departments, and the territorial governments. This consultation will take place over the next four months.

Although the Arctic still contains many small, remote fish stocks which are under-exploited, many accessible stocks are fully utilized, particularly stocks of Arctic charr, beluga, walrus, and narwhal. The whitefishes of the Mackenzie Delta are perhaps the only major under-exploited Arctic freshwater fish resource. Marine fish resources are largely untapped but also largely unknown. Among the marine mammals only the ringed seal appears to have potential for supporting an increased harvest.

Northern residents increasingly are looking towards fish resources to provide food, cultural experiences, and recreation for an increasing population. They also wish to diversify their economic base through commercial sale of fish products between northern communities and to the south. In pursuing development of this renewable resource economy northerners must be concerned not only with the productive limits of the environment but also with economic factors such as high transportation costs and high costs of facilities. The cost of bringing products to market has doomed many promising fishery development projects in the past. On the positive side, there is a growing awareness of the value of non-commercial use of the resources. For example, we are only now becoming aware of the nutritive importance of ‘country food’ in the northern diet.

Northerners realize the importance of environmental protection. Aquatic environmental protection issues range from the local effects of mines to possible regional effects of massive hydroelectric and offshore hydrocarbon developments and of ice-breaking ship traffic.

Northerners also are determined to gain increased control over the management of Arctic resources, including offshore resources. This determination is expressed in efforts towards constitutional development and development of territorial and local governments, and in negotiations on native land claims.

The proposals outlined in this paper are designed to respond to these issues and aspirations. The need for aggressive action to manage and protect Arctic fish resources has never been greater and can only increase.

These proposals recognize that management of Arctic fish resources will be affected by several important initiatives including the Arctic Marine Conservation Strategy (AMCS), Northern Land Use Planning, negotiations on the devolution of responsibility for the administration of freshwater fisheries to the territorial governments, and negotiation of settlements of the comprehensive land claims of northern natives. The proposed management system would implement the fishery management principles set out in the AMCS. It supports Northern Land Use Planning as the major process for achieving integrated resource use planning. It is designed to promote and incorporate developments in devolution and land claim negotiations.

The proposals represent a pro-active approach to managing fishery resources to generate a wide range of benefits for Canadians. Nine strategies are proposed:

1. **predicting and measuring results of management actions,**
2. **involving resource users in decision making,**
3. **planning for fishery management,**
4. **coordinating fishery development programs,**
5. **research,**
6. **delegating freshwater administration to territorial governments,**
7. **integrating structures developed through land claims with the management regime,**
8. **integrating management of renewable and non-renewable resources, and**
9. **international cooperation.**

Together with developing these strategies, the proposal also describes each aspect of DFO's programs for Arctic fishery and habitat management and for providing services to fishermen. Administrative guidelines are proposed for carrying out these programs within the Central and Arctic Region. These proposals are made so that through discussion, programs can be developed that meet the needs of DFO's clients. When discussions on the proposals are completed, all parties will have a clear understanding of the policies and programs for management of the fisheries.

Implementation of these proposals will be slowed at times by the availability of resources. The positive aspect of these constraints is that they will allow us to learn from our mistakes as the management system evolves. Too often the public has been disappointed by the failure of a 'new order' to solve all problems. DFO realizes that problems cannot be solved overnight but is committed to working with its clients for the ongoing improvement of Arctic fishery resource conservation and management.

B. BACKGROUND

1. THE ARCTIC FISHERIES

The Northwest Territories (NWT) and the north slope of the Yukon contain about 36% of Canada's land and 18% of its fresh waters. The Arctic coastline comprises 71% (172 979 km) of Canada's coastline. The total marine area is about 3.2 million km^2 and contains about 67% of Canada's coastal waters. The land is sparsely populated by some 46 000 people comprising about 15 000 Indian and Metis, 16 000 Inuit and 15 000 people of other ethnic origins. Most Inuit live in coastal communities, most Indian and Metis live further inland, and most people of other ethnic origins live in the larger communities.

The exploitation of fish and marine mammals always has been a dominant human activity in the Canadian Arctic. Fish resources serve several functions in the social , cultural and economic life of northerners particularly Indians and Inuit. Domestic and recreational harvesting occurs in all areas where people live or travel. Indian and Inuit annual per capita consumption of fish is estimated to be 85 kg. Annual per capita consumption of seal and whale meat by Inuit is estimated to be about 57 kg and 26 kg respectively. Commercial fisheries occur in waters of Davis Strait and Baffin Bay, some coastal rivers and a few lakes such as Great Slave Lake.

Beluga, bowhead whale, narwhal, walrus and seals occur in the Eastern Arctic and Hudson Bay. Beluga, bowhead whale and seals also occur in the Western Arctic. Commercial whaling, which began about 1600 and continued until 1969, had a major effect on whales. Bowhead was the main quarry although there was some harvesting of narwhal, walrus, beluga and seals. Now, all stocks of these species are harvested in domestic hunts except for the bowhead whale which is recognized as being an endangered species. In 1984/85 about 500 beluga, 300 narwhal, 400 walrus, 37,000 ringed seal, 2,000 harp seal and 2,000 other seals were taken in the domestic hunts. As a result of commercial whaling, the bowhead stocks and the eastern Hudson Bay, Ungava Bay and south-east Baffin beluga stocks are reduced in numbers. The walrus is reduced in range and probably numbers and the harbour seal is reduced in range and numbers. In contrast, no evidence exists that hunting has affected the numbers or range of other beluga stocks, narwhal stocks or other species of seals, nor is there evidence that these stocks and species are being harvested at levels which cannot be sustained.

Important freshwater and anadromous fish resources occur throughout the Canadian Arctic. Anadromous Arctic charr is important along the Arctic coasts, and anadromous whitefishes and ciscoes occur in the lower Mackenzie River and along the Beaufort Sea coast. Whitefish, ciscoes and lake trout occur throughout the inland area and are especially important in the Mackenzie Valley and Mackenzie Delta. Northern pike and walleye are important in some inland areas as are Arctic grayling, inconnu and burbot. These species support various domestic, commercial and recreational fisheries. In 1984/85 about 350 tonnes of Arctic charr and 950 tonnes of other freshwater and anadromous fish were taken in domestic fisheries. That year, about 1,300 tonnes of these species were taken commercially for export from the territories by 122 people, and had a landed value of $1,700,000 and a market value of $3,000,000. The Great Slave Lake fishery provided 93% of the landings (whitefish, northern pike, inconnu, lake trout and pickerel) and three

quarters of the landed value. The Cambridge Bay and Rankin Inlet Arctic charr fisheries provided 4% of the landings and 21% of the landed value. Also in 1985, about 18,300 angler-days were recorded including 7,600 by non-residents. Anglers spent $14,200,000 in the NWT. The main species taken were lake trout, walleye, pike, grayling and Arctic charr. About 304 tonnes of fish were retained.

Marine fish and shellfish are of less direct importance in the NWT at present although species such as Arctic cod and capelin are major links in the Arctic marine food chain. Several species are harvested commercially in the Davis Strait-Hudson Strait area primarily by southern Canadian and foreign fishermen. NAFO established 1985 total allowable catches of 28,300 tonnes for cod and 9,000 tonnes for redfish in the Greenland part of these waters and of 25,000 tonnes for Greenland halibut, 8,000 tonnes for roundnose grenadier and 36,000 tonnes for shrimp in the Canadian plus Greenland waters. Residents of the NWT currently are expressing more interest in commercial harvesting of these resources especially cod, Greenland halibut, shrimp and scallops in the Davis Strait-Hudson Strait area, capelin in Hudson Bay and Pacific herring in the Beaufort Sea. These and other marine fish, such as flounders and other species of cod, invertebrates, such as clams, mussels and starfish, and marine plants, such as kelp, also are harvested for local consumption.

2. MANDATES

a) Department of Fisheries and Oceans

The Minister, DFO, has legislative responsibility, as established by the Constitution Act and outlined in the Government Organization Act, for sea coast and inland fisheries, hydrography and marine science, fishing and recreational harbours, and for the coordination of policies and programs for oceans. The Fisheries Act empowers him to seek the enactment of all regulations governing fisheries in the provinces and territories.

The responsibilities of the Minister with respect to fisheries include:

- providing for the conservation and protection of fish and waters frequented by fish;

- providing for the proper management, allocation and control of the marine fisheries of Canada;

- ensuring a continuing supply of fish and maintaining and developing the economic and social benefits from the use of fish to fishermen and others employed in the Canadian seacoast fishing industry, to others whose livelihood depends in whole or in part on seacoast fishing and to the people of Canada; and

- providing for the proper management and control of the inland fisheries of Canada, and, subject to the constitutional jurisdiction of the provinces, for the allocation of those fisheries.

The Minister may not delegate his statutory responsibility but may delegate the administrative tasks associated with that responsibility. Within the

Northwest and Yukon territories, all fishery management provisions of the Act currently are administered by DFO.

Section 33 of the Fisheries Act is the principal federal statute preventing and regulating discharges of water pollutants that could affect fisheries. Environmental Protection of Environment Canada administers those aspects of Section 33 dealing with the control of pollutants affecting fish. Fisheries and Oceans cooperates with Environment Canada to establish priorities for the protection of fish and their habitats.

The Minister also is responsible for the administration of the Fisheries Development Act, the Freshwater Fish Marketing Act, the Fish Inspection Act, the Fishing and Recreational Harbours Act, the Fisheries and Oceans Research Advisory Council Act, as well as several international treaties and conventions. The most important of these statutes, from the perspective of Arctic fishery management, are the Fish Inspection Act which provides for the inspection of fishery products destined for inter-provincial or international trade, and the Freshwater Fish Marketing Act which establishes the Freshwater Fish Marketing Corporation (FFMC), a crown corporation, as the agency responsible for international and interprovincial marketing of freshwater and anadromous fish harvested in the NWT.

b) Other Federal Government Departments

Other government departments contribute to the management of Arctic fisheries and protection of fish habitat. The Department of Indian Affairs and Northern Development (DIAND) has jurisdiction over the lands, resources, and affairs of the territories and has general responsibility for coordinating federal activities. The Minister for IAND is also responsible for the Northern Inland Waters Act under which territorial water boards regulate the use of water within the territories. Environment Canada (DOE) is responsible for coordinating all federal programs and policies respecting the preservation and enhancement of environmental quality as well as and considering section 33 of the Fisheries Act. DOE, through Parks Canada, also is responsible for management of fish resources in National Parks. The Department of Transport (DOT) administers several acts regulating shipping and protecting the navigability of waters. The Department of Energy, Mines and Resources (EMR) has responsibility for coordinating and promoting policies and programs with respect to energy and minerals. EMR, through the Canadian Oil and Gas Lands Administration (COGLA) controls hydrocarbon exploration in Hudson Bay, Hudson Strait, and waters south of 60°. Canada oil and gas lands north of 60° are administered in cooperation with DIAND. External Affairs is the lead agency for issues involving foreign affairs or trade. The Department of National Health and Welfare (NHW) has responsibility for the promotion of health and social welfare.

DIAND and the Department of Regional Industrial Expansion (DRIE) contribute to the development of northern fisheries through their economic development programming for NWT residents, two major initiatives being DIAND's Economic Development Agreement and DRIE's Special Agricultural Rural Development Agreement. These economic development programs, in addition to a number of other federal and territorial incentives (e.g., DRIE's Native Economic Development Program, the Department of Employment and Immigration's Community

Futures Program, and GNWT's freight assistance programme) provide funds for capital investment, as well as operational and training support.

More complete descriptions of the mandates of these departments are contained in Appendix A.

c) Territorial Governments

The Government of the Northwest Territories (GNWT) and Yukon Territorial Government (YTG) have responsibility for all matters within their territories of a local or private nature including regulation of Commissioner's lands, property and civil rights, education, local government, and the preservation and management of terrestrial animals. They also have administrative responsibility for recreational fishing. Through an agreement with DFO, Renewable Resource Officers also help enforce the Fisheries Act.

GNWT, through its economic development programs, has assigned a high priority to the goal of maximizing the economic impacts from the renewable resource sector of the NWT. The GNWT recently prepared a commercial renewable resources policy, and is now implementing projects under this policy. The GNWT also participates in the administration of federal economic development programs within the NWT.

3. ABORIGINAL CLAIMS SETTLEMENTS

In 1973 the Government set out a policy for the negotiation of settlements of aboriginal land claims. Within the territories only one comprehensive settlement has been reached, with the Inuvialuit of the Western Arctic. Negotiations are ongoing with the Council for Yukon Indians, the Dene/Metis (Mackenzie Valley), and the Tungavik Federation of Nunavut (TFN, Eastern Arctic). A claim to the offshore islands bordering Quebec is still outstanding.

Settlements may include lands, money, sub-surface rights, access to wildlife, compensation for lost wildlife harvesting, and participation in decisions relating to wildlife management and habitat protection. Settlement legislation giving effect to final agreements is paramount over all other federal and territorial legislation.

Land claim negotiations are contributing to the development and improvement of Arctic fisheries management. DFO is an active participant in land claim negotiations. The DFO objective in negotiations is to obtain settlements which: 1) respond to claimant aspirations, 2) guarantee conservation of the resource, 3) establish an effective management system, and 4) give due consideration to the interests and aspirations of other Canadians.

The Comprehensive Land Claims Policy (DIAND, 1987) affirms that the rights of the general public and third party interests will be respected and dealt with equitably in the negotiation of claims settlements. Provision also will be made for protecting the current interests of non-aboriginal subsistence users and for public recreation, including hunting and fishing, on crown lands.

C. OBJECTIVE

The proposed objective of DFO for managing the fish resources of the NWT and Yukon North Slope is:

> **To conserve Arctic fish resources, enhance the net value of the economic and social benefits received by Canadians from these resources, and provide for the equitable distribution of these benefits.**

This objective contains three components: conservation, use of the Arctic fish resources to make the highest possible contribution to economic and social well-being, and equitable distribution of benefits among Canadians.

Conservation means the maintenance of the fish resource so that it may continue to provide benefits to Canadians. Conservation measures are required because fish resources can be reduced by over-harvesting or by damage to fish habitat. Accordingly, DFO proposes to regulate the level of harvesting within the productive capacity of the fish resource. DFO also proposes to protect the habitat upon which the fish resource depends, unless it is assured that benefits will accrue to Canadians that will offset the loss in fish production capacity.

DFO will continue to ensure that total fish production capacity will not be diminished as a result of industrial and other activities. Where the loss of natural productivity is allowed, artificial enhancement may be required. This principle is expressed in DFO's Policy for the Management of Fish Habitat as "no let loss".

Enhancement of the net value of the economic and social benefits is the criterion DFO proposes to guide decisions on the use of Arctic fish resources, or **allocating** the resource. The proposed objective recognizes that fish resources generate both economic and social benefits. **Economic benefits** have a value that can be measured by a price. Usually this means that these things are bought and sold in a market which sets their price. Other benefits which are not usually bought and sold, but which could be, often are included in the class of economic benefits by estimating the price the benefit would carry if it was bought and sold. Examples are estimates of the price people would be willing to pay for recreational fishing or for the fish taken and used in domestic fisheries.

Fish resources also can generate **social benefits** which are not or cannot be bought and sold and for which no attempts are made to estimate a **price.** Examples of these benefits are enjoyment of the fishing experience by people engaged in commercial or domestic fishing, enrichment of the lives of Canadians through the maintenance of distinctive cultures and lifesty es, contributions to nation building through stimulus and maintenance of egional economic activity, and provision of gainful employment to people who ack alternative employment and mobility. The considerable value of these benefits often is ignored when management decisions are made because they have no price associated with them.

This proposal recognizes that the resource conservation, economic and social components of the fish and habitat management objective can be

complementary or in conflict with one another and with other government activities. Noncomplementary objectives are at the heart of many fishery management conflicts. There is a requirement for decisions on the trade-offs to be made between rival objectives. Because there is no ready answer as to how differing economic and social benefits can be weighted, making trade-offs between different uses and benefits becomes a matter of judgement. DFO proposes that a multi-account planning framework be used to display predicted economic and social benefits in order to assist in the evaluation and ranking of management alternatives.

The final component of the objective is the **equitable or fair distribution of benefits.** The managers of a publicly owned resource must be concerned with which groups or individuals in society receive benefits. Examples of distributional issues are the rights of prior users of the resource, of people living near the resource and of people using different natural resources. Equity may at times come into conflict with efficiency. A person receiving a right for equitable reasons may not be willing or able to use it in the most efficient way. Such conflicts are likely to be short term and are best addressed by assisting the rights holder to engage in the most efficient use or allowing him to sell the right. In other cases equity can be maintained by allocating the resource to the most efficient user and recovering part of the value of the resource through a cash **resource rent** which then can be used to provide economic or social benefits for others.

D. STRATEGIES

1. PREDICTING AND MEASURING RESULTS: THE MULTI-ACCOUNT PLANNING FRAMEWORK

DFO proposes that a multi-account planning framework be used to assess the costs, benefits and distributional effects of fishery and fish habitat management options and actions. The planning framework would contain five accounts, each representing an important type of benefit:

1. conservation;
2. cultural;
3. regional development;
4. employment; and
5. economic efficiency.

Where distribution of benefits is an issue accounts would be created for each of the concerned groups.

The economic efficiency account would examine the economic benefits and economic costs of fishery management alternatives. This account would quantify the net contribution of the fishery to national income by measurement of the difference between benefits and costs of providing outputs. Benefits and costs would be priced or measured in dollars, using either actual market values or other measures of consumer willingness to pay for outputs. Observed market prices and costs would be applied where markets exist. Examples are commercial fishery marketed values and commercial fishery harvesting and processing costs. Proxy values would be applied to outputs for which competitive markets do not exist. Examples are estimates of the willingness

of recreational fishermen to pay for access to the NWT sport fishery, above and beyond current licence fees.

Standard fishery economic procedures for each of the domestic, commercial and recreational fisheries would be consistently applied to determine economic efficiency. The procedures would be consistent with the Federal Treasury Board's 1976 benefit-Cost Guide.

The employment account would contain both quantitative and qualitative information. Information on direct employment in each fishery would be documented, and estimates would be made of employment created in service sectors to the fishery. Qualitative statements of the importance of fishery employment would be made by reference to dependence on the fishery, total employment opportunities in the area of study, and the mobility and adaptability of individual fishermen.

The regional development account also would contain both quantitative and qualitative information. The regional income estimate would identify the gross economic impacts of the fishery. The contribution to regional income for each fishery would be quantified using value-added measures, and estimates would be made of regional income created in service sectors to the fishery. Qualitative statements also would be made on fishermen and community dependency on the fishery, and alternatives to the fishery in the area of study.

The cultural benefits account would address the importance of fishing to cultures and traditional lifestyles. For example, the subsistence fishery has been integral to the lifestyles of native people of the Arctic for centuries. This importance is not reflected in proxy estimates of product values. This account would provide qualitative statements of the contributions of fisheries to maintenance and enhancement of cultures and lifestyles.

The resource conservation account would provide a qualitative measure of the extent to which options are consistent with the resource conservation objective. The account would indicate the importance of maintaining genetic diversity. For example, trophy recreational fisheries would be assigned a high value in this account since they have a small impact on the natural population structure, reduce the risk of population collapse and leave opt' ons open for more intensive fisheries.

DFO would have the responsibility of determining the values in the economic efficiency account and in the resource conservation account. DFO proposes to share the responsibility for determining values in the cultura' , employment and regional development accounts with social and economic development agencies. These agencies' would be asked to provide estimates of these benefits and of economic costs when they propose fishery development projects. They would also be asked to provide ongoing estimates of actual benefits.

The multi-account planning framework would be used to display predicted economic and social benefits in order to assist in the evaluation and ranking of management alternatives. The cost of achieving social benefits would be estimated by the reduction in economic efficiency from the management alternative which generates the largest net economic benefit. With this

display of information, managers would be able to make informed decisions involving the trade-offs between benefits and on expenditures on management programs.

Application of the framework would occur over time, because the data required often would exceed that available for Arctic fisheries. Still, over time, implementation of this proposal would lead to a much improved information base to assist fishery management decisions.

Perhaps the most difficult area is that of Arctic habitat management, because ecological processes are complex and unpredictable and because there is uncertainty over the values at risk. Measurement of the relevant economic and social values is difficult.

Factors to be considered include the extent of risk and uncertainty and the possibility that damages will be irreversible. A complete economic assessment requires consideration of future benefits, including consideration that resources with no economic value today may become extremely valuable in the future, due to increased scarcity, changing tastes, or technological development. The benefits include non-consumptive benefits derived from the contribution of fish and fish habitat to the perception of a natural, unspoiled environment. Option values may accrue to Canadians who wish to retain the option to experience that environment in the future. Existence values may accrue to Canadians who have no intention to experience the Arctic environment, but who derive value from the knowledge of its existence.

Because of the uncertainties, DFO would manage Arctic habitat in accordance with the no net loss principle.

Also problematic is the economic valuation of subsistence activity. Ideally, economic estimates of subsistence values would be consistent and directly comparable with values of other goods and services. Due to differences between the traditional sector and the market sector there is no "correct" price for these goods. Nevertheless, several approaches have been suggested to provide proxy values of subsistence activity, including the use of replacement costs (i.e. the price of protein equivalent items), local sales values (e.g. the price of country foods when sold in local and inter-settlement markets), and the opportunity cost of fish (i.e. the value of the same fish in the commercial fishery). The three approaches generate greatly different estimates of value.

In some very important contexts, the differences are not of consequence. The subsistence sector is of such economic, social and cultural importance that DFO assigns the subsistence fishery the first priority in use, subject only to the requirements of conservation. Similar approaches have been taken by the funding agencies in their determination of financial support for subsistence activity. However, there also are situations where the economic measures are of critical importance, such as the determination of compensation when subsistence activity is impacted by other uses of the resource.

DFO proposes to estimate the economic efficiency benefits of subsistence fishing using local sales values for those fish products which are also traded commercially. This approach is most consistent with the principle of measuring benefits by consumer willingness to pay. As the commercial trade of

country foods and the export development of the renewable resource sector expands, relevant market data should be more readily available. Where commercial trade does not take place, other valuation approaches will continue to be applied.

2. INVOLVEMENT OF RESOURCE USERS IN DECISION MAKING

The Central and Arctic Region proposes to establish management boards throughout the Northwest Territories. The composition of these boards would vary depending on the local resource, the wishes of resource users and the existence of other management boards such as might be established through land claim negotiations. The guiding principle would be equitable direct representation on boards of all client groups whose interests may be affected by board decisions and of the general public.

The direct users of the resource, fishermen and hunters of marine mammals, obviously have great interest in the resource and would be represented. The general public as owners, potential future harvesters, and non-consumptive users of the resource also must be represented. DFO officials would be non-voting members of the boards. Other government agencies must participate in fishery management to ensure that their programs for economic and social development and for public health are coordinated with other management efforts. These agencies include the Economic Development and Tourism and Renewable Resource departments of the GNWT and YTG, DIAND and NHW. Voting or non-voting membership might be extended to these agencies, especially when discussions relate to their mandates or programs.

Decisions on the protection of fish and their habitat often affect other interests and government agencies. These interests include other environmental and resource management agencies, such as DOE, and the users of other natural resources. While DFO's mandate is for the management of fish resources and the promotion of the interests of its clients, DFO recognizes that the users of other resources must be consulted when their interests are involved in fishery management decisions. Users of other resources that may be affected by fishery management decisions may be consulted either through invitations to send representatives to board meetings or through working arrangements between fishery management boards and other resource management boards such as the Northwest Territories Water Board.

Decisions would be made by consensus. If consensus could not be reached, dissenting minorities could submit minority opinions together with the majority opinion. Except where a board is given additional powers under a land claim settlement, management boards would send their decisions on to senior regional management of DFO or to the management of other agencies when advising on the programs of those agencies. This reporting relationship will ensure accountability to Parliament through the respective ministers for management of the resource and of public funds used in management and development programs. Regional management may accept, reject or vary the decision after providing the board with written reasons for their actions.

In one sense the boards would be advisory, because the final decision making power would lie with the agencies and ultimately with the ministers.

However, they would be an integral part of the management decision making process and would become the main instrument for evaluating management options and making plans, subject only to final approval by the agency management.

3. PLANNING FOR FISHERY MANAGEMENT

a) Introduction

DFO proposes that management boards assume their role as the main instrument for fishery and fish habitat management through developing and recommending management plans.

The plans will set out management goals and ways to reach those goals. They may include plans for government programs and operational guidelines for the actions of administrators. They eventually should address all aspects of fishery and fish habitat development, management, and protection.

These plans would bring together programs for fishery development and management which are administered by a number of government agencies. The planning process would provide an opportunity for negotiation of solutions for present and potential conflicts between fisheries and between DFO's clients and the users of other resources. The plans would be like contracts between resource users and between government agencies and resource users.

b) Process for Developing Fishery Management Plans

DFO generally would begin the planning process by developing draft plans. Management boards would review these drafts and information received from resource users and government agencies, recommend that agencies gather additional information, and make decisions on the various parts of management plans.

These decisions would be subject to approval by regional management of the appropriate agency which would review the recommendation for consistency with agency policy, for availability of program funding, and for consistency with the information available to the management board.

The approved elements of fishery management plans would be implemented by the agencies with the participation of the users of the resource.

c) Geographic and Stock Scope of Fishery Management Plans

The geographic area, species, and stocks included in any fishery management plan would depend on political boundaries, cultural boundaries, the ranges of management stocks, the nature of fisheries in each area and industrial development scenarios. While political and cultural boundaries are an important consideration in establishing a planning process, the primary consideration for establishing geographic boundaries is the range of the stocks which are managed under the plan.

Generally, management plans would be developed on a regional as opposed to local basis. Management boards could form local community working groups to propose plans for stocks utilized by only one community.

d) What's in a Fishery Management Plan

i) Introduction

A complete fishery management plan would address all aspects of fishery and fish habitat management, conservation, and development. It is expected that comprehensive plans will be developed over time, with management boards addressing high priority aspects of fishery management first and gradually expanding the plan to include less urgent aspects. For the purposes of discussion the overall plan has been broken down into a number of components: the Fishing Plan, Habitat Plan, Research Plan, Fish Quality Plan, Communications Plan and Human Resources Development Plan.

ii) Fishing Plan

Development of a fishing plan would be the first priority for most stocks. Fishing plans would address five closely related aspects of fisheries management: Safe Harvesting Levels, fisheries development, allocation, control of fisheries, and compliance.

Development of a fishing plan would begin with the assignment of a **Safe Harvesting Level** for each stock. Safe Harvesting Levels generally would take the form of a Total Allowable Catch (TAC) or provisional TAC, except for stocks of those species, such as scallops, which are best managed by other methods. A TAC is an estimate of the optimum harvest from a stock. TACs would be based on data from fishery monitoring, inventory and survey research, and experimental management on economic data, and on information on other benefits.

Planning for **fishery development** would require consideration of the current and future needs of each existing fishery such as native, domestic, recreational and commercial fisheries. It also would require identification and evaluation of development opportunities. Such opportunities may be identified by government agencies, communities, or individual entrepreneurs. Evaluation of development opportunities would include evaluation of local interest, of costs and benefits, and of availability of fishery resources in light of Safe Harvesting Levels, allocation policy and prior legal claims. Marketing arrangements also would be considered.

Fishing plans would address long-term **allocation of fish resources** to different fisheries. These allocations might take the form of area zoning or reservation of portions of TAC'S. It also might set allowable levels of fishing effort for some fisheries to ensure efficient harvesting.

Fishing plans also would provide for yearly allocation of fish resources to individuals or enterprises within fisheries. Fishing plans might make direct allocations to individuals or enterprises, recommend appointment of an allocation authority for a fishery (such as a local hunter trappers organization), or recommend guidelines for administrative allocation by DFO.

The allocation plan also might recommend resource rents or fees as a mechanism for making allocations or redistributing the benefits obtained from the use of the resource.

Fishing plans must ensure adherence to TAC and allocations through control of fisheries. This might be done through quotas, licence requirements, closed seasons, gear restrictions, or catch and possession limits. A licensing system also might impose a reporting requirement on fishermen.

Fishing plans would suggest compliance measures such as appointment of monitors or guardians, conservation education programs and types of enforcement activities to be undertaken.

iii) Habitat Plan

Habitat plans would address needs for habitat protection, restoration and enhancement. Plans would assess the importance of habitat to the maintenance of stocks and the present and projected use of these stocks. Plans also would assess the sensitivity of habitat to disturbances. They also might assess opportunities for increasing net benefits by habitat enhancement.

Habitat management plans might suggest zones in which special controls such as permits, apply. The plans might suggest guidelines for review and approval of development applications received by DFO from other agencies. These guidelines might include provision for public or committee review of certain categories of applications. They also might include terms and conditions which are to be considered when reviewing various classes of development, such as requirements for environmental monitoring. Finally, plans might deal with enforcement of habitat use controls in a manner similar to the compliance component of the fishing plan.

iv) Research Plan

Research plans would identify information needed to make management decisions and ways of obtaining this information. Research plans would ensure that research activities are responsive to the needs of the people making fishery management decisions. The plans would address five general types of research: economic, biological inventory and survey research, fishery and habitat monitoring, experimental research and experimental management.

Economic research includes viability analysis of development proposals, estimation of the benefits generated by fisheries, cost-benefit analysis of fishery or habitat management programs, and valuation of fish habitat.

Habitat inventory, survey and monitoring includes assessment of fish habitat, baseline data collection and post-development effects monitoring.

The fishery resource inventory and survey component would establish a timetable for inventory and survey programs and describe these programs. Fishing plans and fishery monitoring would guide the establishment of inventory and survey priorities.

The fishery monitoring component would ensure that information is collected on the size of the harvest taken by all fisheries from each management stock. Such information might be collected through survey programs or harvester reporting of catches. Collection of biological information as to the age, sex, or maturity of animals caught, also might be included in a monitoring program.

Management Boards also would suggest topics for experimental research and management by indicating needs for improved estimation of potential yields or prediction of impacts from habitat alteration.

v) Fish Quality Plan

Fish quality plans would ensure that standards under the Fish Inspection Act for fish destined for export or inter-provincial trade would be met when new equipment or facilities are planned and provide for certification of facilities and product inspection.

The fish quality plan also would provide for inspection of fish destined for local trade or domestic consumption for chemical and biological contaminants. NHW, YTG and GNWT also have responsibilities for ensuring the wholesomeness of food consumed by northerners and would be involved in fish quality planning. The fish quality plan would focus the programs of all concerned agencies and ensure the establishment of safe levels for contaminants, and detection and prevention of contamination.

vi) Communications Plan

Communication plans would address education of the public in resource management techniques and issues, in the nature of the resource, and in practices for resource conservation.

vii) Human Resources Development Plan

Efficient use and management of fishery resources requires people with high levels of skill in biology, business management, fishing, guiding, tourism, processing and marketing. Management boards would be encouraged to develop plans which identify necessary skills, recommend training and assistance programs to develop these skills, and facilitate access to existing training and assistance programs.

4. COORDINATING FISHERY DEVELOPMENT PROGRAMS

The development of Arctic fisheries involves several government agencies which promote economic and social development and the individuals, corporations, cooperatives and communities who are proponents of particular developments. DFO, the agency charged with management of the resource, has a responsibility to ensure that development activities are coordinated and contribute to enhancing net benefits from the resource over the long term.

New fisheries must contribute to the management objective of conserving the resource, enhancing the value of benefits obtained from the resource (net of management costs), and equitable distribution of benefits. This

requirement implies that the development be consistent with DFO's policies on safe harvesting levels, allocation, monitoring, inspection, and marketing. Planning for development must include consultation with all interested agencies and individuals.

Coordination of the programs of DFO and other government agencies responsible for economic and social development would be an important aspect of fishery development planning. Management boards would review development proposals and might recommend government assistance to the proposed development.

5. RESEARCH

Planning and management decisions for management and protection of fish and marine mammal stocks and their habitats must be based on scientific knowledge, information, and understanding. A broad program of investigatory activities including qualitative and quantitative assessments and surveys, desk analysis, experimental management and experimental research on fish and marine mammals and their habitats will provide the basic knowledge, data and understanding for planning, and decision-making.

Local and industry knowledge and experience will form part of the inputs to the ongoing science process. Much of this input will come through the development of research plans by management boards.

DFO will ensure high quality of scientific advice for Arctic resource management decisions through its advisory committees.

6. DELEGATION

DFO recognizes and supports the government priority of devolving certain responsibilities to the territorial governments. DFO will seek agreements on the transfer of administration of non-anadromous freshwater fisheries to the governments of Yukon and the Northwest Territories.

Through transfers the territorial governments would become responsible for such things as licensing, enforcement, allocation and enhancement. Administrative arrangements would be set out in a general agreement between the Government of Canada and the respective territorial government. Matters such as the administration of habitat and aquiculture would be dealt with in auxiliary sub-agreements. The transfer would not include responsibilities for anadromous or catadromous fish or marine mammal management.

7. INTEGRATING STRUCTURES DEVELOPED THROUGH LAND CLAIMS

Indian and Inuit fishermen and hunters of marine mammals have a right to involvement in the management of the resource which stems not only from their current use, but also from their aboriginal use of the land. The aboriginal rights of native peoples to use fish and marine resources and participate in their management are being defined through land claim negotiations. These special rights must be recognized by any management system.

Integration of management procedures and structures developed through land claim negotiations with DFO fisheries management structures is necessary if the spirit as well as the letter of land claim agreements is to be reflected in fishery management.

Where fishery or wildlife boards are established through the comprehensive land claim negotiation process, DFO prefers that these boards assume the functions of a fishery management board. Where a board has been established under a land claim settlement the terms of the settlement with regards to the powers, duties, and reporting of the board would take precedence over DFO policy, should there be a conflict. If DFO proposes to expand the powers and duties of such a board to include areas of fishery management which are not addressed in the claim settlement the board would be subject to DFO policy when exercising these powers. The most important of these policies is the equitable representation of all client groups and of the general public.

8. INTEGRATED RESOURCE MANAGEMENT

DFO considers integrated resource management to be the best method for balancing the management and protection of fishery resources with the use of other natural resources. DFO will be an active participant in the development of an integrated resource management regime in the territories and will take a particularly active role in the development of an integrated resource management process for marine areas, as outlined in the Arctic Marine Conservation Strategy, and in the development of integrated land use plans through the Northern Land Use Planning process.

The development of fishery management plans would greatly assist the evolution of integrated resource management by providing input on the fisheries sector. Fishery management plans would be one input to the Northern Land Use Planning Commission and Regional Commissions and in environmental impact assessments of major development projects.

9. INTERNATIONAL COOPERATION

DFO will maintain and promote international cooperation on the conservation of Arctic fisheries resources and their habitat. DFO will honor its obligations as a signatory to international conventions and agreements having implications for Arctic resource management and science, such as NAFO, the North Atlantic Salmon Conservation Organization (NASCO). DFO will continue to actively seek international arrangements to further its resource management and scientific objectives for Arctic fisheries resources.

D. ADMINISTRATIVE GUIDELINES

1. INTRODUCTION

The management objective, and nine strategies which have been proposed, would form the cornerstones of fishery and habitat management and protection within the Arctic. However, more detailed guidelines will be necessary to

apply their strategies within the Central and Arctic Region. To estimate the development of these guidelines and ensure that everyone understands and agrees to them, DFO has developed a comprehensive proposal for each major aspect of fisheries and habitat management and protection and for programs serving fishermen. It is hoped that the programs and procedures which arise from discussion of the proposal will provide an agreed upon and understood framework by which DFO and the management boards can manage the resource in cooperation with all affected communities of interest.

2. SAFE HARVESTING LEVELS

a) Introduction

A key step in attaining the resource conservation objective for most fish and marine mammal species is the establishment of a **Safe Harvesting Level** for each harvested stock which is within its productive capacity. The following policies are proposed to ensure conservation of the resource while enhancing net benefits from its use.

b) Guidelines

A Total Allowable Catch (TAC) would be set for those currently exploited stocks for which sufficient scientific data is available to predict productive capacity. Exceptions may be made for certain stocks which can be better managed by other methods such as escapement, size and gear restrictions. Examples would be the salmon fishery on the West Coast and the scallop fishery on the East Coast. For currently unexploited stocks where insufficient scientific data is available to establish an accurate TAC, a conservative provisional TAC will be established so that planners are aware of the available resources. As more scientific data is gathered, the provisional TAC would be adjusted in accordance with up-to-date scientific advice.

In establishing a TAC for any stock, the objective would be to generate the greatest long-term benefits from the use of the resource. This objective suggests that, in all cases, the TAC should be established at or below the stock's productive capacity, or expressed in another way, the largest catch which can theoretically be taken on a continuous basis without damaging the stock.

When Canada gained exclusive jurisdiction for its fishery out to 200 miles, it adopted a cautious fishing strategy for most stocks on the east coast. This policy has resulted in fairly stable fisheries, resource growth, improved catch rates and larger fish. Costs of fishing above this harvest level exceed the benefits of chasing and catching increasingly scarce fish.

DFO generally would require that when the theoretical productive capacity is known, the TAC for Arctic fish stocks not be greater than 85-90 percent of that capacity. TAC'S for some stocks may be set below this level, particularly if a lower level would generate greater net economic or social benefits.

Where fishing and hunting have reduced fish or marine mammal stocks to below the productive capacity of their habitat, harvest levels would be established so that populations can be rebuilt to full productive capacity. The planned rate of recovery would depend on the economic and social objectives established for the fishery. In rare instances, populations may have been reduced to dangerous levels. In such cases, a TAC of zero should be set, leading to suspension of the harvest until the stock has recovered to a safe level. Relevant information would be reviewed by an internal DFO committee (AFSAC). Where possible, confidence limits would be placed on parameters so that managers would be informed of uncertainty in the estimates. AFSAC would recommend on information gathering activities necessary for the improvement of estimates. DFO also would provide advice on economic costs and benefits.

DFO would seek to maximize the input of resource users in establishing harvest levels within these policy boundaries. In the short term input would be through consultation with local harvester organizations and in the longer term through management boards.

3. ALLOCATION

a) Introduction

Allocation of the right to use the available resource is the key to efficient use. Allocation takes place at two levels: among types of use or fisheries (domestic, recreational, commercial) and among enterprises or individuals within fisheries. To ensure the enhancement of net benefits a management system must allocate the resource to the fisheries which produce the greatest benefits (best use) and ensure efficient harvesting of the allocated resource by each fishery. Choosing the best use for resources involves trade-offs between economic and social benefits. The proposal gives those closest to the resource the opportunity to make recommendations on these trade-offs. The proposal also adopts the most direct method of ensuring efficient harvesting: giving resource users maximum freedom in harvesting and utilizing the resource which they are allocated.

b) Guidelines

Generally, management boards would recommend guidelines or a fishery development plan for use in making decisions on individual applications for harvesting rights. Applications by small private operators to use an under-utilized resource would be processed according to the guidelines or plan. Proposals involving a large portion of the available resource, re-allocation of the resource or significant government subsidies may require case-by-case analysis of costs and benefits. Alternatively, they could recommend a mechanism or allocation authority for making allocations to enterprises within a fishery. For example, a board could recommend that a hunter, trapper association allocate within certain local fisheries. Where a board decides that a stock or fishery should be managed in the most economically efficient manner the board might wish to recommend that the right to harvest portions of the resource over a defined time period be issued as transferable individual allocations.

Management boards would allocate among fisheries to produce the greatest net benefit. Benefits from different fisheries would be compared using the multi-account planning framework. When assessing the value of economic and training benefits, consideration would be given to the difficulty of transferring fishing industry job skills to other better paying jobs which may become available in the future. The immobility of fishing industry labour might mean, in some cases, that employment in the fishing industry has a negative training benefit. To ensure long term enhancement of benefits it may be necessary to refuse applications to use an unused resource. Refusal would prevent the development of low value fisheries which would prevent better use of labor, capital, and fish resources in the future.

This policy of 'best use' allocation would be subject to native rights. Until the aboriginal rights of northern natives are defined through the settlement of outstanding land claims, DFO would continue to give first priority in allocations to native domestic fisheries. Where negotiations give a right to use a defined quantity or proportion of the resource, as opposed to a right to use the resource for a specific purpose, DFO would assist native groups in making efficient use of resources through the development and possible commercialization of native fisheries.

Investments by fishermen of time, money and effort would be recognized in giving them priority in future allocation of the resource. The priority is subject to conservation of the resource and maintenance of efficiency. Compensation may be paid for lost investment in exceptional cases such as displacement of existing enterprises caused by settlement of aboriginal claims. When efficiency demands reallocation of resource between fisheries such people might be assisted in entering the new fishery.

Producing the greatest net benefit from the resource requires not only allocating the resource to the fisheries which are the most productive but also ensuring that each fishery sector harvests in the most efficient manner. Where no one owns a right to catch a specific amount of the resource, fishermen compete to catch as much of the resource as possible before it is caught by someone else. This competition results in higher fishing costs, such as labour, capital investment and operating expenses, than are necessary to catch all the available fish. There are two methods to prevent this and ensure efficient harvesting: allocating the right to catch a specific quantity of the resource to each enterprise or individual within each fishery, and regulating the amount of inputs such as capital and labor which can be used within each fishery.

DFO proposes that the former method be used and that fisheries, and enterprises or individuals within each fishery, be assigned a number or weight of animals they may catch. This system would ensure efficient harvesting, would minimize conflicts between harvesters and would prevent over-harvesting. Such allocations also would allow removal of restrictions on what the individual does with his catch. Such restrictions, for instance prohibition of the sale of domestically caught fish, are indirect methods of limiting the harvest and would not be necessary under such an allocation system.

Open ended allocations based on need for a specific purpose, such as domestic consumption, and general rights to fish, such as current angling

licenses, would be avoided whenever possible. Where specific quantities for native domestic fisheries cannot be negotiated, the use of fish taken in these fisheries would be restricted and the potential harvest would be estimated and subtracted from the TAC before making other allocations.

4. COORDINATION OF FISHERY DEVELOPMENT INITIATIVES

a) Introduction

Each participant in the development of a fishery makes a distinct contribution. The contribution of DFO is authorizing the use of a portion of the resource and the expenditure of program funds to-service the new fishery. The policies of DFO on coordination of development initiatives are designed to facilitate and promote development, ensure efficient use of resources and provide for adequate services.

b) Guidelines

To plan for fishery development information is required on fish resource availability, potential conflicts with existing and potential uses, and the costs and benefits associated with the proposed development and other options. Estimates of potential costs and benefits would include potential subsidy or retraining and labour redeployment costs should the fishery fail, as well as immediate employment and training benefits. Potential economic benefits, costs and degree of risk would be assessed through market research and economic analysis.

DFO accepts primary responsibility for the provision of information on resource availability, existing uses and alternate potential uses. The proponent might be required to provide projections of the costs and benefits associated with the development and data on actual costs and benefits once the development has occurred. For individual proponents this might take the form of a business plan and subsequent financial reporting. If the proponent is a development agency, DFO might require estimation of the economic and other costs and benefits included in the multi-account planning framework.

DFO is mindful of the need for prompt response to development proposals and of costs imposed on other agencies and individuals through requests for information. Information requirements would be limited by the objective of enhancing benefits from the fishery, net of management costs, including the costs of obtaining such information. Financial information, projections and business plans obtained from individuals would be confidential to those involved in the making of decisions.

Coordination of fishery development and planning eventually would be done through fisheries management boards. Until this function is assumed by these boards, DFO proposes to ensure coordinated and rational development of fisheries through internal review of privately funded proposals for fishery development and, for proposals which require government financial assistance, participation in the review of applications for such assistance. These reviews would be conducted in consultation with community organizations such as hunter, trapper associations.

5. HABITAT MANAGEMENT

a) Introduction

DFO's habitat management program consists of two components :

1. administration of the Fisheries Act provisions dealing with the prevention and correction of damage to fish habitat; and

2. development and restoration of habitat whenever such improvement would provide net benefits.

Habitat protection costs include costs borne by users of other natural resources who must alter their activities to protect fish resources. Estimation of costs and benefits associated with habitat protection is very difficult. This is particularly true for future benefits and benefits from non-consumptive use of the resource. Habitat issues also can have distributional effects when benefits derived from other natural resources are received by different groups than benefits from fish resources.

DFO released a national Policy for the Management of Fish Habitat in October, 1986. This policy established the objective of a national net gain of fish habitat productivity. This is to be attained through a guiding principle of no net loss of natural productivity and through habitat restoration and development. In applying these principles to specific cases it may be necessary to analyze costs, benefits and the distribution of benefits.

The Policy for the Management of Fish Habitat emphasizes the integration of habitat management with fishery management and with the management of other natural resources. This integration is necessary for the estimation of costs and benefits and distributional effects. Development of fishery management and habitat plans is the first step towards this integration.

b) Guidelines

i) Habitat Protection

DFO would continue to rely on the inter-agency referral, review and consultative process (Appendix 8) as the primary method for identifying activities which might have negative impacts on Arctic fish or fish habitat. Reviews would be conducted by DFO staff in accordance with any fish or fish habitat plans which have been developed. DFO would consult on specific applications with any existing management board or other organization representing fishing interests if required by a management plan or if considered necessary by the reviewing officials. DFO would provide permit referrals, including information on referrals, additional information that was requested, assessments, and the resulting permit with terms and conditions on request. Additional information may be requested from the proponent of an activity pursuant to section 33.1 (1) of the Fisheries Act.

DFO would participate in any public review processes administered by other agencies which are relevant to the protection of fish and fish habitat.

In particular, DFO will fully participate in the reviews of water use applications received by the Northwest Territories Water Board including public hearings.

DFO would continue to participate in or initiate detailed assessments of the possible environmental impacts of major natural resource development projects. These assessments may take place under the Federal Environmental Assessment and Review Process, the environmental screening and review provisions of land claim settlement, section 33.1 (i) of the Fisheries Act or the Inquiries Act.

DFO first would attempt to have necessary prohibitions or restrictions incorporated in the permit issued by the referring land or water use authority. If it is not possible to implement restrictions in this way, DFO might invoke the habitat protection provisions of the Fisheries Act.

If an activity that may have a negative impact on fish or their habitat is not regulated by another agency, DFO might regulate the activity directly under the Fisheries Act. The only current example of this in the Arctic is the permit system for use of explosives on or near water.

DFO also might establish management areas to provide additional protection for important habitat. Management zones might be established on the initiative of DFO or on the recommendation of management boards or integrated resource planning or management agencies. Users of other natural resources within a proposed management area would be consulted during planning to minimize disruption of their activities and balance costs to the users of various resources. A management area might contain zones in which specified activities are prohibited, restricted, or subject to a special permitting process under the Fisheries Act.

DFO would participate in the development of a system of marine protected areas in the Arctic. Development of marine protected areas will require cooperation between DFO, DOE, DIAND, GNWT, YTG, native organizations, Northern Land Use Planning Commissions, and communities. DFO will take the lead in developing criteria for selection of marine protected areas and in analysis of Arctic marine areas against selection criteria.

ii) Habitat Restoration and Development

DFO would support habitat restoration or development projects where they would produce net economic or social benefits through increased resource availability and utilization. Habitat restoration and development might include removal of man-made and natural barriers to fish movement, physical alteration of habitat such as construction of spawning beds, lake fertilization, control of predators, competitors, parasites and diseases, introduction of food organisms, and installation and operation of waste treatment facilities. Due to the high cost of these activities in the north and the widespread availability of natural stocks, opportunities for cost effective activities may be rare. Where such opportunities are identified, DFO would endeavour to support the project through existing departmental resources and through coordination with other economic and social development agencies. DFO also would encourage and provide technical advice for community based organizations engaging in habitat restoration or development.

6. RESEARCH

a) Introduction

Research is used here to mean the gathering and interpretation of information on which to base fishery management decisions. Research has application in the initial formulation of such decisions so as to increase benefits and decrease risk, and in subsequent fine-tuning, revision and improvement of such decisions.

Economic research includes market identification and assessment, product development, enterprise financial projections, compilation and analysis of catch and sales statistics, valuation of benefits which are not priced, and development of valuation methods. Economic data are necessary for the assessment of TAC. Economic data also provide input for allocation decisions and decisions on level of management effort.

Biological research includes research on fish and their habitats. It can include inventory and surveys, monitoring, desk analysis, experimental research and experimental management. The first two categories generate descriptive knowledge and generally address questions of what/where/when. The latter three categories generate functional (why/how) knowledge, generally in a manner which involves formulation and testing of hypotheses. These three categories are sometimes referred to as basic research.

Inventory and survey research pertains to a single point in time. It necessarily has a predominant field component, and is fundamental to all other categories of biological research. It is the typical starting point for establishment of new fisheries, or for prediction of habitat disturbance. Fishery inventory and survey research is conducted for the purposes of identifying and defining exploitable stocks, and estimating their size or productive capacity. Data may be collected and interpreted on occurrence of animals, numbers present, distribution of size and age, other vital statistics, and genetic makeup.

Habitat inventory and survey research is conducted for the purposes of identifying and defining environmental parameters in a given area at a particular point in time. Data may be collected and interpreted on geological, physical, chemical, meteorological, biological, and other parameters, including fish habitat usage. Fishery and habitat inventory and survey research provides the most fundamental baseline information.

An example of fishery survey research is the test fishery. This is often an appropriate level of survey if a new fishery (especially a new commercial fishery) is contemplated. Under a test fishery program local fishermen, under DFO supervision, conduct a small-scale fishery using commercial fishing gear. Data are collected on size and age distribution of the catch and on catch per unit effort. This information, together with information on other stocks inhabiting similar waters, is used to set a conservative provisional TAC, which is subject to adjustment according to monitoring results or other future research.

Monitoring is the repeated collection and analysis of data on a fishery or fish habitat over time. It implies a revisiting of research sites for

the purposes of determining trends. Fishery monitoring may involve three broad categories of biological data: quantity of animals being taken, characteristics of animals in the catch (size, age, reproductive status, etc.), and catch per unit effort. These data may be collected by self-reporting, recall surveys, catch sampling, or examination of commercial or other records.

Fishery monitoring data can be used to improve many management decisions. Information on the quantity of animals harvested is of primary importance. The relationship of the harvest to the TAC allows interpretation of trends in the stock. Monitoring of biological parameters, such as age or length distribution of the catch, gives indications of the effects of the harvest on the population. Catch per unit effort data can provide information on trends in population size. Together, monitoring of the quantity of the harvest, of biological parameters, and of catch per unit effort form the lowest cost method for assessing whether the TAC for a population is at or above the MSY level.

Habitat monitoring consists of the collection of information on fish habitat before and after an undertaking which may change the environment. The purpose is to detect changes. Included are baseline physical and chemical information and information on animal and plant distributions. Habitat monitoring provides invaluable information on the accuracy of impact predictions and effectiveness of mitigation methods. This information leads to better prediction and mitigation both for the monitored activity and future activities.

Habitat survey and monitoring includes gathering of information of fish and marine mammal distributions and habitat usage and the physical, biolgical and chemical characteristics of habitat.

Desk analysis involves the exploitation of existing data, to test an hypothesis. Existing data must necessarily derive from survey or monitoring activities. This type of analysis typically precedes the more interventive types of basic research, defining the hypotheses to be experimentally tested and guiding the experimental design. Because desk analysis does not involve the collection of data it is a very cost effective way of obtaining information on which to base management decisions.

Experimental research involves the testing of an hypothesis or prediction through controlled experimentation. It is aimed at increasing understanding of how biological systems work. This understanding then can be applied to management of stocks or habitats over the range encompassed by the new knowledge. Experimental research provides additional information to further improve management decisions. Because of the high cost and intricate nature of experimental research it must be carefully planned. DFO has a responsibility to coordinate government policies and programs relating to oceans, including research. Further, through issuing permits under the Fisheries Act for all research by other agencies involving collection or disturbance of fish, DFO has a responsibility to ensure coordination of all fisheries research. Finally, DFO must coordinate its own research with that of other agencies and ensure that its research is responsive to the needs of resource users.

Experimental management is a type of experimental research. It makes use of the fact that a management decision has been made, and tests an hypothesis through the implementation of that decision. An example would be to set fishing mortalities at different levels for a number of otherwise similar stocks, and then compare the effects of these different fishing mortality levels on long-term productive capacity. Execution of the basic information gathering aspects, of course, involves monitoring. The effects of the different levels are then compared. Experimental management can provide much new functional information at low cost.

b) **Guidelines**

i) **Economics**

DFO would, with the assistance of the Freshwater Fish Marketing Corporation, intermittently monitor costs and economic benefits associated with fisheries as required. DFO would assist in the preparation of enterprise business plans. DFO also would provide advice on economic valuation of benefits which are not priced, such as the value of recreational fishing. DFO would conduct research into improving economic valuation techniques. Generally, market research and product development research would be the responsibility of development proponents and government agencies which promote economic development.

ii) **Biology**

The quantity of the harvest would be monitored for all fisheries. Biological data on animals taken in the fishery and catch per unit effort data also would be collected for all fisheries, more frequently if the harvest is nearing the TAC or if there is significant uncertainty as to the proper level of a TAC.

Users of the resource have an obligation to participate in fishery monitoring through reporting of catches, effort data and economic data and through provision of biological samples. This obligation can be viewed as an implicit charge for the use of the resource. Resource users generally would not be compensated for contributions to fishery monitoring. If necessary, this obligation would be reflected in regulations and licences.

Organizations representing resource users and management boards would be involved in the design and implementation of fishery monitoring and might assume primary responsibility for monitoring particularly if they have been delegated authority over allocations.

DFO would establish timetables for inventory and survey work through consultation with management boards or resource users. The costs of conducting inventory and survey research, above those which are recovered through sale of the products of test fisheries, generally would be paid by DFO. Scheduling of inventory and survey research would be subject to availability of financial and human resources. If the proponent of a particular fishery development, either another government agency or an individual, wishes to advance the scheduling of a survey the proponent might negotiate a cost sharing arrangement with DFO. Individuals might make financial contributions or contributions in kind through participation in a test fishery.

Where individuals contribute to a survey this contribution would be counted as an investment in the fishery when any future allocations are made. Individuals would be selected for participation in stock assessment programs based on the allocational priority of the fishery they wish to pursue and on the recommendations of the appropriate management board or allocation authority.

DFO would continue to conduct habitat inventory and survey research. Plans for habitat inventories and surveys would be included in habitat plans. In all cases, planning would include consideration of fishery management plans and likely patterns of use for other natural resources which may effect fish habitat.

In addition to its own habitat inventory and survey program, DFO would encourage users of other natural resources to engage in habitat assessment and may require proponents of particular developments to conduct accelerated baseline studies and site-specific studies, as part of an environmental impact assessment and review process (EARP), other regulatory processes or under section 33.1 (i) of the Fisheries Act.

The Department will rely increasingly on monitoring as a habitat management tool. Proponents of particular activities or projects might be required to conduct site-specific monitoring studies as a condition of project approval as determined through discussions with DFO.

DFO may carry out monitoring of general environmental trends, particularly where an environment is subject to alteration from many ill-defined sources.

DFO also will conduct experimental research and experimental management in support of Arctic fishery management. This work will be directed towards predicting the responses of fish and marine mammal populations to exploitation, developing improved predictive models, and developing improved methods for monitoring and assessing populations. Research topics may include the biology of exploited species, relevant ecology, impacts of fishing and status of stocks.

Similarly, experimental research and management in support of Arctic fish habitat management and protection will be directed towards development of methods for predicting and mitigating impacts of human activities and for restoring and developing habitat. Researchers also would engage in detailed assessment of the relative importance of specific habitats to fish production, and the effects of chemical, physical and biological changes on fish resources.

DFO would publish an Arctic fishery and habitat management research plan every three years. This plan would set out current areas of management research interest and relate the Department's research plans for the next three years to these priorities. The plan also would contain recommendations for fishery and habitat management related research which could be performed or funded by other government agencies, industry, universities or non-profit organizations.

Research plans would be developed in consultation with resource users, resource managers, other government agencies, industry, universities, the international scientific community and non-profit organizations. Management boards and science advisory councils which may be established under land claim settlements would have an important role in these consultations. Research will be coordinated with that of scientists elsewhere in Canada and the world.

DFO would continue to review Scientific Permit applications in order to ensure that impacts on the resource and on fisheries are minimized and justified by the potential benefits of the research. If appropriate, DFO would consult with management boards or resource harvesters prior to approval of applications. Permits generally will require reporting of activities and contacts between the researchers and community organizations. DFO would publish yearly summaries of permits and of reports received. Information received through permit applications and reports would be used to enhance coordination and integration of research activities and to improve management.

7. CONTROL AND REGULATION

a) Introduction

The Fisheries Act and Fish Inspection Act authorize DFO to regulate the activities of individuals for the purposes of conserving fish resources, managing fisheries, allocating rights to use the resource, and ensuring the quality of fishery products destined for inter-provincial or international trade. DFO's policy in administering these and other Departmental acts is governed by the Government of Canada's Regulatory Policy and Citizen's Code of Regulatory Fairness (1986).

b) Guidelines

The Citizen's Code states regulation will be kept to the minimum necessary for the protection of community interests. With regards to regulation under the Fisheries Act, this means regulation will be kept to the minimum necessary to ensure adherence to catch levels and allocations, to provide for proper management of the resource, to ensure protection of fish and their habitat. With regards to regulations under the Fish Inspection Act regulations will be kept to the minimum necessary to protect public health and the quality reputation of Canadian fishery products.

The Citizen's Code also states that the benefits of regulation must outweigh the costs, that regulation must be demonstrated to be the best alternative, and that businesses of different sizes not be burdened disproportionately by regulations. Implementation of these policies is ensured through the objective of enhancing the net value of benefits received from the resource and the coordination of fishery development.

The Citizen's Code also emphasizes consultation and participation of Canadians in the regulatory process. Consultation would be ensured by management boards and consultative processes. In addition, DFO recently has adopted procedures which will guarantee that no new regulation takes place without prior consultation and without the reasons for new regulations and their content being communicated to the public in clear language before they come into effect.

Finally, the Citizen's Code emphasizes the role of competitive markets as an efficient alternative to regulation except when overriding national interests are at stake. This is reflected in the allocation guidelines which propose the use of a market system to make allocations whenever possible.

The goals of minimizing costs and interference with personal freedom best can be achieved through direct as opposed to indirect control of the target activity. Attempts at indirect control, while often superficially attractive, almost invariably contain 'loopholes' which must be addressed through increasingly complex provisions. These provisions often lead to restrictions on individual freedom which are increasingly remote from the target activity. For this reason, DFO favours allocation systems which give unconditional rights to capture and dispose of specified quantities of the resource subject only to gear restrictions necessary for resource conservation, reporting requirements necessary for resource management and arrangements for orderly marketing. The benefits predicted to flow from use of the resource would be considered when allocations are made. Individuals would be free to harvest the resource in any way which is consistent with conservation and dispose of the products of the fishery as they see fit. Reports on actual catches, costs and benefits resulting from the fishery would be used when making future allocations. Such a system eliminates the need for regulation of the disposition of the catch including prohibitions on sale and wastage. Closed seasons and gear restrictions would be used only when necessary to conserve a segment (age class, spawners) of a stock or mixed stock, not as an indirect way to control allocations or total harvest through introducing inefficiencies.

DFO would consider alternative methods of controlling fisheries before making regulations. Two alternatives are self-regulation by organizations representing fisheries or communities and delegation of authority to administer or enforce regulations. These alternatives would be adopted whenever they provide the level of control necessary to ensure adherence to TAC and allocations and the level of reporting necessary for effective management of the resource.

8. COMPLIANCE AND ENFORCEMENT

a) Introduction

Once control systems for fisheries and related activities have been implemented, it is necessary to ensure an acceptable level of compliance. Compliance can be enhanced through education, interpretation of requirements, monitoring, and enforcement. Enforcement includes the investigation and prosecution of suspected offenses.

b) Guidelines

In cooperation with the Federal Statutes Compliance Project of the Department of Justice, DFO will develop comprehensive compliance policies for key sections of Departmental acts and regulations.

The main method of enforcing Departmental acts and regulations would, except for those aspects delegated to the territories, continue to be for the

Fisheries Act and regulations patrols by fishery officers, and for the Fish Inspection Act facility and product inspections by regional staff appointed under this Act. Renewable Resource Officers of the GNWT will continue to have appointments as Fishery Officers and be active in the enforcement of regulations relating to recreational fishing and other areas delegated to the territories and collection of evidence on violations of other sections of the Fisheries Act and regulations. DFO would encourage participation of resource users in the enforcement of the Fisheries Act and regulations through appointment and training of volunteer fishery monitors, who would be trained to collect evidence on violations, and of fishery guardians who would be appointed under the Fisheries Act.

DFO will continue to rely on other government agencies for compliance with and enforcement of habitat protection conditions included in permits issued by those agencies and DOE for compliance with section 33 of the Fisheries Act. However, if necessary, DFO will take action under the Fisheries Act. Compliance policies are being developed for the habitat protection sections of the Act.

Harvester organizations such as local hunter, trapper organizations must ensure compliance with self-imposed regulations. These organizations may obtain compliance from their members by education, interpretation of requirements, and monitoring of compliance. DFO is willing to assist in these activities upon request. Examples of possible internal sanctions are fines and suspension of "membership of members who fail to comply with by-laws. Where the organization has a delegated role in allocation of harvesting rights to individuals, the organization may elect to suspend the harvesting rights of transgressors.

9. FISH QUALITY

a) Introduction

DFO has a responsibility under the Fish Inspection Act to ensure the quality of fishery products destined for inter-provincial or international trade. DFO policy on inspection of fish originating from Arctic fisheries must meet public health and marketing needs for quality assurance while facilitating maintenance and development of remote fisheries.

All fishery products destined for inter-provincial or international trade must conform to the requirements set out in the Fish Inspection Regulations under the Fish Inspection Act. These regulations require that products be processed at a certified plant and that all unloading, handling, holding, and loading facilities meet standards set out in the regulations. The regulations provide for the certification of vessels used to catch fish used in these products. The regulations also set out labelling requirements and grade standards and empower the inspection of all fish and fish products falling within the regulations.

DFO shares responsibility for ensuring the wholesomeness of fish consumed by resource harvesters or destined for intra-provincial trade with other agencies, in the Arctic primarily NHW and the territorial governments. DFO has a responsibility to monitor and control man-made contaminants which

may negatively affect fish or the use of fish by people. This responsibility is shared with DOE which administers the contaminants section, section 33, of the Fisheries Act on behalf of DFO.

b) Guidelines

i) Application of the Fish Inspection Act to Arctic Fisheries

DFO is sensitive to the needs of small experimental Arctic fisheries and seeks to apply the Fish Inspection Regulations in a way which facilitates development while assuring maintenance of product quality. Fish caught in test fisheries which are frozen on-site may be exported from the territories provided they are transported under sanitary conditions and shipped under detention to a registered place outside the territories for further processing or inspection before distribution.

DFO will make every effort to conduct inspections of new processing and holding facilities to facilitate their registration. Cost recovery arrangements may be negotiated to provide inspection services to test fisheries, particularly test fisheries funded by other government agencies. DFO will provide inspection services once these fisheries become established.

ii) Fisheries not Subject to the Fish Inspection Act

DFO will coordinate activities under the Fish Inspection Act and under the contaminants section of the Fisheries Act with activities of other agencies responsible for protection of public health. DFO will initiate discussions with these agencies on possible cooperation including sharing of data from contaminants testing, modification of testing done under the Fish Inspection program to include tissues consumed in domestic use, development of a data base on the relationship between contaminant concentrations in fillets and other tissues, and use of the Department's facilities for analysis of tissues collected by other agencies.

DFO will continue to test for contaminants in samples of fish and marine mammal products provided by resource harvesters.

10. FISHING VESSEL INSURANCE

a) Introduction

Through the Fishing Vessel Insurance Program (FVIP) DFO provides marine insurance coverage to protect the capital investment of commercial fishermen from accidental damage or loss. The FVIP is available to Canadian fishermen or companies that have an insurable interest in a commercial fishing vessel that is used to harvest or transport fish or marine resource for profit.

The Plan protects fishermen against total and partial loss caused by marine perils, fire, theft and other similar perils. Payout for a total loss is generally 100% of the insured value and for partial loss, the cost of repairs less a deductible which is usually 5% of the insured value. Collision liability is also provided up to the insured value of the vessel.

b) Guidelines

To be eligible for insurance coverage from FVIP, applicants must demonstrate that the vessel will be engaged in the commercial harvest or transportation of fish or a marine resource, or in a test fishery project, for example, the applicant possesses a commercial fishing licence or permit. FVIP will not, however, insure the vessel while engaged in commercial, non-fishery activities.

11. SMALL CRAFT HARBOURS

a) Introduction

Under the authority of the Fishing and Recreational Harbours Act, DFO constructs, maintains and manages commercial fishing and recreational harbours.

The Marine Policy Assistance Program applies to breakwater construction and initial dredging for recreational and sports fishing harbour development, provided the developer (private enterprise, municipalities, or other agencies), spends at least equal amounts on upland development for the purpose of providing vessel berths and services for sports fishing and recreational boaters.

Under the Tourist Wharf Program, DFO may build launching ramps provided the developer provides parking, turning area and road access in locations were there is tourism potential or in which tourism is an established industry.

b) Guidelines

The Small Craft Harbour program is funded annually and projects may be undertaken within departmental priorities and available funding, with the emphasis being placed on safety of present harbour facilities, development of additional commercial fishing harbour facilities where warranted, and cost sharing of developments under the Marina Policy Assistance Program and Tourist Wharf Program.

Emphasis is placed on local management of harbours through management leases, development of harbour authorities and ministerially appointed Harbour Managers.

12. MARKETING

a) Introduction

The Freshwater Fish Marketing Act established the Freshwater Fish Marketing Corporation (FFMC) to regulate the inter-provincial and export trade in freshwater fish. The Act gives the FFMC a monopoly on the export and inter-provincial trade between Alberta, Saskatchewan, Manitoba, northern Ontario and the Northwest Territories of the products of listed species of freshwater fish. The Act also provides for agreements between Canada and

these provinces regarding intra-provincial trade. The purpose of the Act is to increase returns to freshwater fishermen through orderly marketing of their products.

b) Guidelines

All marketing of fish products must be consistent with the provisions of the Freshwater Fish Marketing Act and agreements under this Act. Proposals for special marketing arrangements must be approved by the FFMC. DFO will facilitate discussions between the FFMC and development proponents to ensure that suitable marketing arrangements are incorporated in development plans.

13. CONSERVATION EDUCATION AND COMMUNICATIONS

a) Introduction

Communication of information on its policies and programs and on the management of fishery resources is an important part of DFO's responsibilities. DFO also must communicate directly with a wider public including hunter, trapper associations, wildlife and conservation groups and school children.

DFO must communicate information on its mandate, its programs and services, management boards, management plans, and current fishery and habitat management issues. Resource managers also should engage in conservation education. Conservation education includes explanation of the biology and habitat requirements of fish, of basic principles of fishery management, of efficient fishing and hunting techniques and use of fish products, and promotion of conservation of fish.

DFO also recognizes the importance of communication by resource users to resource managers. DFO believes in continued and enhanced contact between its people in the field, fishery officers and biologists, and users of the resource.

b) Guidelines

Contacts between working level staff and hunter, trapper associations, school children, and community groups will continue as the prime mechanism for communication.

Management boards would be encouraged to communicate with the public through public meetings and the publication of management plans.

As part of its commitment to conservation education, DFO will continue and expand its involvement in the development of curricula for northern schools which stress education in renewable resources, their use, and their conservation. DFO will continue and enhance production of printed materials and audio-visual aids on conservation and its policies and programs.

DFO will publish a report on Arctic fisheries every two years. This report will include information on the location, size and value of all fisheries within the region. Valuations will be based on the multi-account

planning framework. The report will contain summaries of progress toward the development of management plans and of fishery management decisions including TAC, major allocations, monitoring programs, stock assessment programs and control mechanisms. The report also will outline the status and of each managed stock and knowledge on the availability of unexploited stocks.

Summaries of permits issued under DFO regulations, including seismic permits and scientific permits also will be published.

14. HUNAN RESOURCE DEVELOPMENT

a) Introduction

Improved management, protection and utilization of the fish resources of the Arctic will require improvement of the skills of people involved in all aspects of the fishery. Training of northern residents in biology and wildlife management so that they may become fully involved and employed in management of the resource, and in business management and job skills so that they may develop new fisheries enterprises, are particular priorities. Training community residents in monitoring compliance with the Fisheries Act would aid enforcement.

b) Guidelines

DFO will increase its efforts to facilitate the use of existing training programs and funds for the development of the human resources necessary to improve Arctic fishery management. The focus will be on training northern residents for full participation and employment in the management of the resource. Training will be provided through existing programs and funds. The Department will produce a directory of available training and assistance programs applicable to fishery training in order to facilitate such access. Management" boards would be encouraged to develop human resource development plans identifying training needs and to become involved in assessing training programs and funds.

E. IMPLEMENTATION

It will take time to implement the management regime which will develop through discussion of this proposal and develop the programs necessary to support it. The development and implementation of comprehensive fisheries management plans throughout the Northwest Territories and Yukon North Slope cannot be accomplished overnight or even within one or two years. The establishment of management boards alone would require much time and effort for the negotiation of the composition of boards and selection of members. A learning period then would be necessary for board members and DFO to become acquainted with new roles. The pace of plan development and implementation also would be constrained by the resources available to DFO. Given these constraints it will be necessary to establish priority areas for development of plans.

The order of development of management boards and plans would be determined primarily by the urgency of management issues. Priority issues and

stocks would be identified through consultation with clients, through AFSAC, and through the knowledge of DFO staff. The pace of plan development in any region also would be dependent upon the willingness of clients to participate in the process and on the existence of opportunities provided by developments in the negotiation of native land claims.

Once a management board is established it would be free to develop its own planning priorities, addressing priority issues within the framework of a comprehensive fishery management plan and addressing additional aspects as high priority issues are resolved.

In most cases development of fishing plans would be the first priority. Until management boards are established, DFO Area Managers will be responsible for developing fishing plans for exploited stocks through consultation with local harvester organizations. Plans will be based on stock status reports prepared by DFO, scientific advice from AFSAC, and economic advice provided by DFO. These plans will be reviewed by management boards as they are established.

DFO has established the Fisheries Joint Management Committee in the western Arctic under the Inuvialuit Final Agreement, the Great Slave Lake Advisory Board and the Great Bear Lake Management Board. Development of the Southeast Baffin Beluga Management Committee is progressing. DFO also is committed to participation in a Nunavut Wildlife Management Board in the eastern Arctic. Further development of these initiatives is a priority.

Priority issues currently identified by DFO for early resolution through development of management plans include management of beluga stocks, management of several char stocks, management of broad whitefish in the Mackenzie Delta, management of the lake trout stocks of Great Bear Lake and the east arm of Great Slave Lake, and development of a habitat management plan for Tuktoyaktuk Harbour.

APPENDIX A

MANDATES OF OTHER GOVERNMENTS AND DEPARTMENTS

a) Department of Indian and Northern Affairs

DIAND, under the Department of Indian Affairs and Northern Development Act, has jurisdiction over the resources and affairs of the Northwest Territories and Yukon Territory, with responsibility for coordinating federal activities, and implementing policies and programs for social, economic and political development and the Northern environment. The Department has responsibility for land statutes and Cabinet approval to implement a Northern Land Use Planning program where "land" is defined to include marine areas out to the legal limits of the continental shelf. DIAND has responsibility for non-shipping provisions of the Arctic Waters Pollution Prevention Act with respect to the unauthorized deposition of wastes into Arctic Waters. DIAND, in part through COGLA and in cooperation with EMR, administers hydrocarbon resources on Canada Lands pursuant to the Canada Oil and Gas Act and the Oil and Gas Production and Conservation Act (for northern areas other than Hudson Bay and Hudson Strait where EMR has responsibility). In 1986 the Canada Oil and Gas Act was replaced by the Canada Petroleum Resources Act. DIAND also administers the Northern Inland Waters Act which provides for territorial water boards to regulate the use of water.

b) Environment Canada

DOE, under the 1979 Government Organization Act, is responsible for coordinating all policies and programs of the Canadian government respecting the preservation and enhancement of the quality of the environment. DOE plays the role of environmental advocate by advising industry and other departments, and informing the public, of environmental implications of developing projects and by participating in northern planning activities. By order-in-council DOE may establish environmental guidelines for other departments and agencies. DOE administers the Ocean Dumping Control Act whereby permits must be obtained to dump prescribed substances into the sea or onto sea ice, the section of the Fisheries Act regarding the deposition of deleterious substances into waters frequented by fish, and the recently enacted Environment Act. Under the National Parks Act, DOE establishes and administers national parks. DOE also administers the Canada Waters Act which provides for protection of interprovincial waters and the Environmental Contaminants Act. The Atmospheric Environment Service of the Department provides meteorology and sea-ice data services. Through Cabinet policy and the Federal Environmental Assessment and Review Office (FEARO) the Minister is responsible for the environmental assessment and review of major projects which could have a significant impact on the Arctic marine and fresh water environment. DOE also is responsible for regulation of fisheries and protection of fish and fish habitat in national parks through administration of the National Parks Act by Parks Canada.

c) Department of Transport

DOT is responsible for the Canada Shipping Act and for the shipping provisions of the Arctic Waters Pollution Prevention Act. Pursuant to the latter Act the Coast Guard administers: the Shipping Safety Control Zones Order; Arctic Waters Pollution Prevention Regulations; and Arctic Shipping

Pollution Prevention Regulations. MOT also administers the Navigable Waters Protection Act which protects the public right of navigation by regulation of works that may affect navigable waters, and may utilize the TERMPOL Code to assess pollution problems associated with marine terminal applications. The Coast Guard has operational responsibilities in accordance with the Arctic Marine Emergency Plan and the interim Arctic Seas Contingency Plan. Additional Coast Guard responsibilities include: icebreaking and escorting services; ship and port safety; northern resupply; navigational aids; the NORDREG (northern traffic zone regulations) voluntary vessel traffic management system; and the Arctic Shipping Control Authority.

d) Department of Energy, Mines and Resources

EMR has responsibilities under the Resources and Technical Surveys Act and the Energy, Mines and Resources Act for coordinating, promoting and recommending national policies and programs with respect to energy, mines and minerals, including their production, transportation, distribution and export. Through the Canadian Oil and Gas Lands Administration (COGLA), it directly administers hydrocarbon exploration and development on Canada Lands in Hudson Bay, Hudson Strait, and offshore south of 6(I degrees. The Minister is responsible for the Petro Canada Act. EMR's operational responsibilities are carried out through the Energy Program, and the Mineral and Earth Sciences Programs. The Minister also is responsible for the National Energy Board which has regulatory authority over offshore pipelines and hydrocarbon export licences. EMR also administers the Arctic Waters Pollution Prevention Act regulating non-shipping activities in Hudson Bay and Hudson Strait.

e) External Affairs

External Affairs has a broad mandate with respect to: the conduct of relations with foreign countries in the fields of foreign policy and trade; Arctic sovereignty matters; and the Law of the Sea. This includes a role in the Canada - U.S. Joint Oil Spills Contingency Plan, and the Canada - Denmark Marine Environment Cooperation Agreement.

f) **National Health and Welfare**

The Minister of Health and Welfare, pursuant to the Department of National Health and Welfare Act, has responsibility for the promotion of the health, social security and social welfare of the people of Canada. His authority extends to supervision, with respect to public health, of all forms of transportation including railways, boats and ships. Health and Welfare also administers the Food and Drugs Act, the Opium and Narcotics Drug Act, the Quarantine Act, the Public Works Health Act, Leprosy Act, the Proprietary or Patent Medicine Act, and the National Fitness Act as well as all orders and regulations made pursuant to these Acts.

National Health and Welfare is responsible for the delivery of health services in the North. Inuit in the eastern Arctic agreed to the territorial government assuming responsibility for health services.

In the Yukon, discussions are taking place within the claims forum to identify programs which may be transferred to the territorial government or Council of Yukon Indians.

g) Governments of the Yukon and Northwest Territories

The Governments of the Yukon (YTG) and Northwest Territories (GNWT) through their various ordinances, have responsibility for the regulation of Commissioner's lands, administration of justice, labour standards, direct taxation, property and civil rights, road maintenance, preservation of game, education, public works, local government, housing, worker's compensation and all matters of a local or private matter. They also administer the licencing of recreational fisheries.

The federal government has indicated its willingness to transfer federal responsibilities for some matters to the territorial governments. Agreements for forestry, and health services in Baffin Region have been reached. Discussions regarding the transfer of health services throughout the rest of the NWT and Yukon are ongoing.

APPENDIX B

ARCTIC ENVIRONMENTAL MANAGEMENT AND THE REGULATORY PROCESS

INTRODUCTION

Environmental management is a decision-making process directed to preserving the natural and cultural heritage and maintaining the renewable resource base, while achieving utilization of natural resources in a manner which provides optimal economic and social benefits.

Requisites to accomplishing this goal are:

1. Adequate baseline information and research to ensure understanding of the productivity and viability of northern ecosystems, the prediction of the inter-relationships between resource uses and the environment, and the implementation of effective mitigative measures;

2. Formulation and coordination of policies, legislation and programmed to allow effective implementation;

3. Comprehensive renewable resource use planning which is commensurate with economic activity and is based on the broad, long-term cumulative and interactive effects of the uses;

4. Protection of those areas which are unique to Canada's natural and cultural heritage; and

5. Decisions made that are based on an awareness of and give due consideration to the views of all groups affected, including the fostering of international cooperation concerning the Arctic environment.

BACKGROUND

At the present time environmental management in the NWT is the joint responsibility of the federal and territorial government. The role of the territorial government is related to their responsibility for management of game, excluding habitat. However, the greatest responsibility for environmental management in the North rests principally with 5 federal departments - Indian and Northern Affairs, Environment, Fisheries and Oceans, Energy, Mines and Resources, and Transport Canada.

The Department of Indian and Northern Affairs is the lead agency by virtue of the Department of Indian Affairs and Northern Development Act, which gives the Minister responsibility for control, management and administration of essentially all (98%) public lands, and for coordinating federal activities in the North.

THE ONE WINDOW APPROACH

Because of the involvement of two levels of government and various federal departments, numerous inter-governmental /inter-departmental

administrative arrangements have been developed over the years to coordinate activities and provide information exchange on areas of mutual concern and issues related to environmental matters in the North. By participating in these arrangements, DFO has opted to forgo using directly the powers of the Fisheries Act and instead stipulates conditions required to protect fish and marine mammal resources and their habitats through other departments legislation. Not only does this process enable a coordinated review of development proposals, but it limits the number of regulatory approvals which developers must seek. The principle review mechanisms include:

1) Regional Screening and Coordinating Committee (RSCC)

Coordinates DOE/DFO regional involvement with EARP (federal Environmental Assessment and Review Process). To provide technical support, five standing sub-committees have been established including:

i) RSCC Regional Dredging Committee
ii) RSCC Regional Mining Committee
iii) RSCC Regional Transportation Committee
iv) RSCC Regional Hydrocarbon Committee
v) RSCC Regional Hydropower Committee

2) NWT Coordination Committee

Provides for information exchange and orderly development in the north. Numerous sub-committees and working groups have been established by ACND.

3) Arctic Waters Advisory Committee (AWAC)

Advises DIAND. Reviews and regulates development activities in northern waters under the auspices of the Arctic Waters Pollution Prevention Act.

4) DOE/DFO Regional Environmental Emergencies Team (REET)

Provides scientific advice and/or action to meet the needs of the on-scene-commander with respect to environmental emergencies.

5) Environmental Advisory Committee on Arctic Marine Transportation (EACAMT)

Advises DOT's Control Authority on environmental aspects of Arctic shipping.

6) Federal /Territorial Lands Advisory Committee (LUAC)

Reviews land use policies and land use activities in the NWT.

7) Interdepartmental Dredging Committee (IDC)

Reviews all dredging programs in the NWT.

8) Interdepartmental Environmental Review Committee (IERC)

Reviews major industrial projects at the headquarters level and develops operating conditions.

9) NWT Water Board Technical Advisory Committee (TAC)

Provides technical advice to the NWT Water Board for the development of operating conditions.

10) Regional Environmental Review Committee (RERC)

Coordinates regional reviews of all new development activities in the NWT.

11) Regional Ocean Dumping Advisory Committee (RODAC)

Reviews ocean dumping policies and activities in the NWT and develops operating conditions.

In addition to the above regulatory and review mechanisms, there are other means by which DFO achieves it's habitat management objectives. These include:

1) participation in regional land use planning exercises, such as the Lancaster Sound Regional Study and Northern Land Use Planning;

2) routine operational linkages, such as between the Canadian Hydrographic Service and the Coast Guard;

3) regular formal and informal contacts with industry and other government departments to review industry and government plans and to conduct joint reviews and research projects on matters of mutual interest;

4) international agreements such as the Marine Environment Cooperation Agreement signed by Canada and Denmark in 1983;

5) cooperation with the Department of the Environment in the administration of section 33 of the Fisheries Act through memoranda of understanding and daily contacts;

6) potential interaction with the structures evolving as a result of land claim settlements such as the Environmental Impact Screening Committee and the Environmental Impact Review Board established under the Inuvialuit Final Agreement.

THE REVIEW PROCESS

On receipt of a development proposal by the appropriate regulatory committee, the DFO member will normally assume the responsibility for leading and coordinating the departmental review. Depending on the nature and scale of the development, representatives from regional groups, departmental sectors or outside experts may be asked to review and comment on the proposal. The DFO committee member will then prepare recommended terms and conditions and supporting documentation for further review if necessary, and submission to the Committee.

For large scale developments, it may be necessary to prepare a departmental position paper for approval by senior management. When such developments involve the marine environment, the Arctic Offshore Development Committee may be asked to take the lead in coordinating the Department's input, because of the large number of DFO sectors and regions potentially involved.

Problems with the Process

Over the years, a number of reviews have been carried out of the environmental management process in the north. Areas identified as needing attention include:

1) The erosion of government's capability, and hence credibility, in northern scientific research, and the need for new or modified institutional arrangements which will reduce compartmentalization and communication problems within and between government and industry.

2) Greater public participation in the review process.

3) The need to eliminate overlap in the terms of reference of the numerous committees, and to enunciate clearly the respective roles of government and industry in meeting the requisites for environmental management.

4) There is no framework in which to view each resource use application and hence assess the broad, long-term cumulative and interactive effects, and so resolve competing resource uses.

5) There is a need to address certain gaps and duplications which exist in the various acts and regulations. Some examples include the Arctic Waters Pollution Prevention Act and the Ocean Dumping Control Act; duplicative requirements of the National Energy Board and the Environmental Assessment and Review Process; references to the deposition of deleterious substances to inland waters in both the Northern Inland Waters Act and the Fisheries Act; and administration of Section 33 of the Fisheries Act.

Effectiveness of the Process

Despite the problems raised above, it is generally accepted that the one window regulatory approach is an effective one. It avoids duplication in the licencing process and minimizes the number of government approvals which must be sought by industry. Seldom has DFO encountered difficulties in having appropriate terms and conditions incorporated into development licences and permits. When arguments have arisen it was usually the result of a data base which was inadequate to support the control. It should be noted, however, that despite working under the one window approach, DFO still maintains the right to invoke the habitat protection provisions of the Fisheries Act should it feel that the terms and conditions of a licence are not adequate. To this point in time no such actions have ever been required.

Perhaps the major criticism of the regulatory process is not in the licencing procedure, but in the enforcement of the terms and conditions. Again, DFO has the authority to lay charges should an infraction of the Fisheries Act occur and if the Department is not satisfied with the action taken by the regulating agency. However, seldom has the Department been required to do so.