ARCOD WORKING PAPER 88-1

DEPARTMENT OF FISHERIES AND OCEANS CONTRIBUTION TO THE DEVELOPMENT OF THE LANCASTER SOUND REGIONAL LAND USE PLAN

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ARCTIC OFFSHORE DEVELOPMENT COMMITTEE
DEPARTMENT OF FISHERIES AND OCEANS

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Any correspondence concerning this working paper should be addressed to:

Dr. R. McV. Clarke
Chairman, Arctic Offshore Development Committee
Department of Fisheries and Oceans
501 University Crescent
Winnipeg, Manitoba
R3T 2N6

Phone (204) 983-5182

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INTRODUCTION

As part of the northern land use planning process in the Northwest Territories, the Lancaster Sound Regional Planning Commission was established in September, 1986, to prepare a land use plan for the Lancaster Sound Regional Planning Region. The area covered by this Planning Region is shown in Fig. 1. The land use plan will address the use of land and waters and their resources.

To facilitate the gathering of information, the Regional Commission formed ten working groups to address different topics. The Department of Fisheries and Oceans (DFO) participated in the activities of four of the working groups: Conservation and Archaelogy, Renewable Resources, Tourism and Economic Development, and Plan Implementation, Review and Revision. DFO prepared background information for the working groups and participated in their meetings.

This ARCOD Working Paper contains the information that was provided by DFO to the Regional Commission and to the four working groups. The first part outlines the department's position and suggestions on issues that should be addressed in the land use plan for the region, and outlines a proposal for implementation of the plan. The second part contains the maps of fishery resources requested by the Regional Commission.

LANCASTER SOUND PLANNING REGION

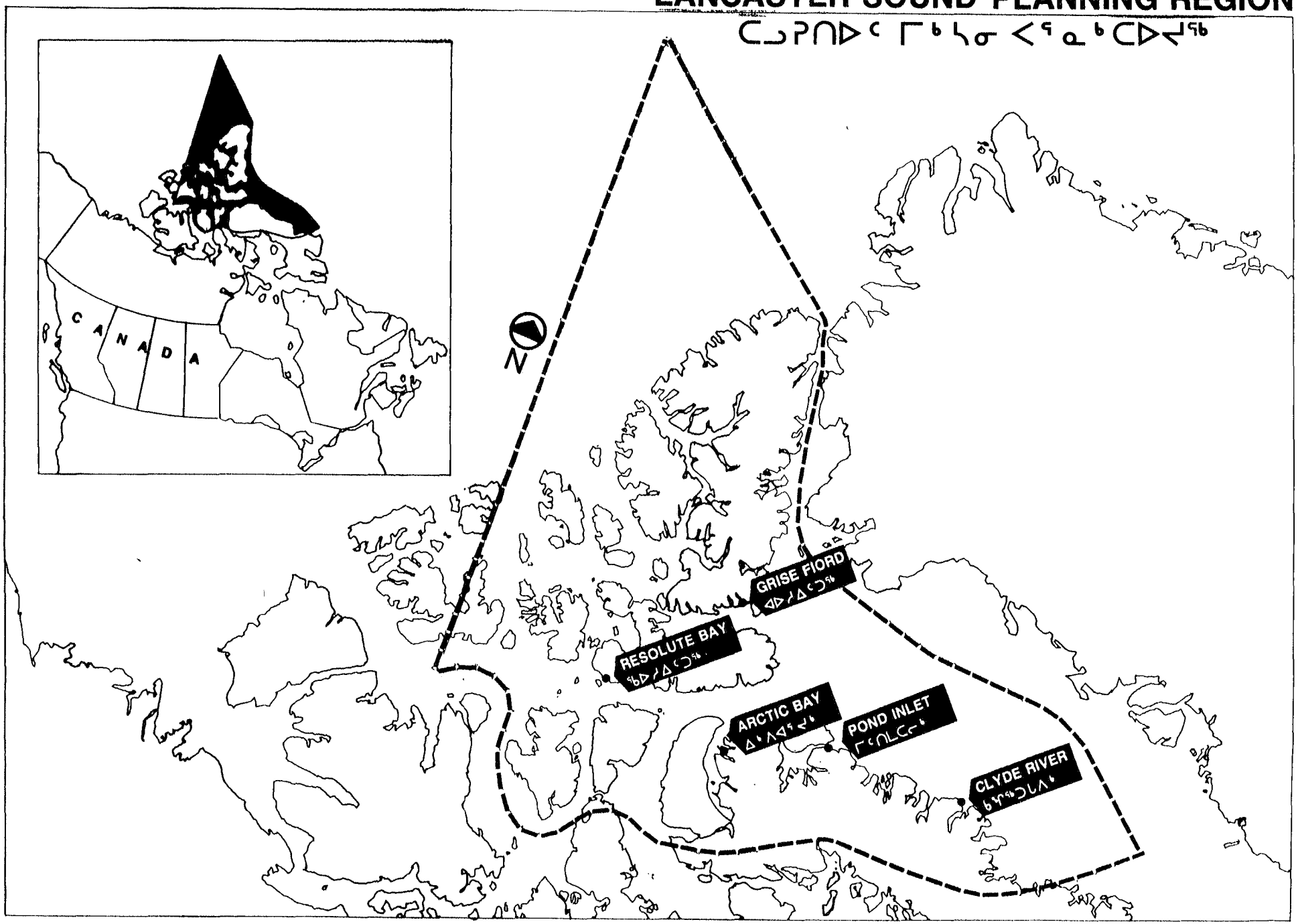

FIGURE 1

Part 1. Department of Fisheries and Oceans. Contribution to the Development of the Lancaster Sound Regional Plan.

DEPARTMENT OF FISHERIES AND OCEANS

CONTRIBUTION TO THE DEVELOPMENT OF THE LANCASTER SOUND REGIONAL LAND USE PLAN

Prepared for

THE LANCASTER SOUND REGIONAL PLANNING COMMISSION

AUGUST, 1987

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BACKGROUND

The Department of Fisheries and Oceans (DFO) is pleased to provide the following statement to the Lancaster Sound Regional Planning Commission. The statement outlines the department's position and suggestions on issues that should be addressed in the land use plan for the region and a proposal for implementation of the plan. It also contains annexes outlining the department's responsibilities (Annex 1), and an overview of the mapped information provided to the Regional Commission (Annexes 2 and 3). The department recognizes that the Regional Commission is receiving this and other contributions from communities, other agencies and the Regional Commission's working groups, all of which have to be integrated into the land use plan.

The Lancaster Sound Planning Region is vast and varies significantly in its physical and biological characteristics. The northwestern portion is of little known importance to fish and marine mammals. In contrast the southeastern portion, especially the Lancaster Sound area, is unique amongst global ecosystems and is of great importance for marine mammals and seabirds. Its uniqueness results from a combination of factors. Winter fast ice, summer open water and advancing and retreating ice edges occur in a complex archipelago, and the strong and complex tidal and ocean currents create polynyas, shear zones and early opening corridors. A variety of landforms provide deep fjords for summering narwhal, shallow bays for beluga, cliffs for nesting seabirds and islands and lowlands for eiders and other waterfowl.

Of particular relevance to the department are the fish and marine mammal resources (see Annex 2). This area supports 85% of North America's narwhal and 40% of the beluga population. In addition, there are populations of ringed, harp and bearded seals, and small colonies of walrus. The endangered bowhead still occurs in small numbers throughout these waters. Populations of Arctic charr occur in fresh and marine waters. These resources are of utmost importance to the Inuit as food and culturally. Marine mammals are harvested from the fast ice, at the floe edges and in areas of summer concentrations, and Arctic charr are harvested primarily in lakes, estuaries and adjacent marine areas.

Fisheries knowledge for the planning region also varies. Information for the southeastern portion is more extensive than for the northwestern portion. Basic knowledge exists on the distribution and abundance of marine mammals and Arctic charr. There is little knowledge on marine fish and invertebrates, little understanding of the functioning of the marine ecosystem, for instance the food of marine mammals, and little understanding of the long-term impacts of industrial activities and shipping on fish and marine mammal populations.

The area's biological significance is recognized nationally, and internationally by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Union of Conservation of Nature and Natural Resources (IUCN) and the International Biological Program (IBP). These organizations and many other organizations and people consider that conservation and protection of the renewable resources should be the primary goal for the area. Such an approach must be balanced with the continued use of the fishery resources by Inuit residents, and with other uses such as its potential as a transit route for increased shipping and its anticipated value for

hydrocarbon development. Also, an increase in population of the region or at specific sites may increase local pollution, disturbance and harvesting pressure on the renewable resources which may be unable to withstand these impacts. Major issues such as the meaningful participation by local people in planning and decision making and the potentially unequal distribution of social costs and benefits from development are considerations in the integration of these divergent interests.

The Department of Fisheries and Oceans is responsible for the management and protection of the fish and marine mammal resources which are of such great importance in the Lancaster Sound Planning Region. In addition, the department has a mandate to coordinate the policies and programs of the Government of Canada respecting oceans, including the Arctic seas. The department recognizes the importance of Northern Land Use Planning in developing a blueprint for integrated conservation and management which, with the commitment of the planning partners, will promote the protection, management and development of fishery resources as well as in implementing aspects of the Arctic Marine Conservation Strategy, DFO's fish habitat management policy and other legislative responsibilities (see Annex 1).

OVERALL PRIORITIES

Based on its responsibilities, the Department of Fisheries and Oceans has three priorities for planning, management and development in the Lancaster Sound Planning Region.

1. **DFO's first priority is the conservation and management of fish and marine mammal resources and their habitats. The land use plan should reflect the special areas important to fish and marine mammals identified by DFO.**

   An integral part of land use planning is the protection, as required, of important habitats and populations for use by current and future generations of Canadians on a sustained basis. Because of the biological and physiographical limits to productivity in the region and international sharing of populations, conservation must be carried out over large areas, the entire range of species and processes upon which they depend, in order to be effective. Setting aside conservation areas with varying degrees of protection is compatible with DFO objectives.

2. **DFO's second priority, subject to the overriding priority of conservation, is the sustained use of fish and marine mammal resources by northerners. Non-consumptive uses and new harvesting opportunities could be developed where they do not conflict with existing uses or with conservation requirements.**

   Hunting, fishing and trapping continue to be important sources of income and food in all communities in the region. These activities not only provide the maintenance of a high protein country food diet but are equally important to the cultural and social survival of the Inuit. Consideration must be accorded to the growing northern tourism industry and to commercialization of renewable resource harvesting.

3. **DFO's third priority, subject to the priorities of conservation and renewable resource utilization, is to ensure that other activities such as shipping and the development of non-renewable resources proceed with minimal effects on fish and marine mammal resources, their habitats and harvesting.**

   There is national interest in the exploration for and development of non-renewable resources in the region particularly in attaining domestic energy resources. However uncontrolled development without consideration of critical habitats and renewable resources could change migration patterns and population sizes of animals and affect their harvesting by local people. In most areas, compatibility between conservation of renewable resources and non-renewable resource development and shipping may be achieved by recognition of spatial, temporal and other constraints, but in some areas development may not be compatible with conservation.

APPLICATION TO THE LANCASTER SOUND PLANNING REGION

Because of the planning region's extent and its biological and physiographical diversity, the department proposes that its three overall priorities be applied on an area by area basis. To this end the department has classified the region into three categories reflecting relative importance to fish, marine mammals and harvesting. It is stressed that:

- the classification is based on existing information and so might change as new information becomes available;
- boundaries between areas are the best estimate as to where such a line should be drawn, but spatial importance usually changes gradually;
- even within areas, importance may vary from site to site, from season to season and from year to year.

The following criteria were used in classifying areas: distribution and abundance of harvested and ecologically important species; status of fish and marine mammal stocks; susceptibility of stocks to human activities; importance and susceptibility of habitats to human activities; and location of harvesting.

The classification for this region is based on information for marine mammals and Arctic charr since insufficient information for this purpose exists for marine fish and other species. Marine mammals, the large terminal predators and grazers of the Arctic marine ecosystem, are thought to be the species most at risk from overharvesting or environmental change, and, in general, the longer-lived whales are more at risk than the shorter-lived seals. Species that aggregate, such as beluga, walrus and Arctic charr, are more at risk than those that do not. Stocks whose current abundance is at low levels, such as the protected bowhead, some Arctic charr stocks and walrus which is reduced in range and probably numbers, are more at risk than stocks whose levels are not reduced. Freshwater and shallow coastal habitats are more at risk than habitats in other waters, and habitats in the channels of the Arctic Archipelago are more at risk than those in the open ocean. Important habitats also occur under ice and at ice edges. These generalizations are reflected in the classification.

Current harvesting of fish and marine mammals should continue in areas of all three categories subject to the requirements of resource conservation. New domestic, commercial or recreational fisheries could be developed in all areas, again subject to the requirements of resource conservation. Also, whale-watching and other non-consumptive uses of fish and marine mammals could be developed in all areas subject to requirements such as no disturbance of whales, and if compatible with existing or proposed activities.

In contrast to harvesting and whale-watching, other human activities, such as non-renewable resource development, construction and operation of facilities and shipping, should be managed so that they do not affect renewable resources and their harvesting in the region. The categories have different basic requirements for protecting fish and marine mammals from such activities, and these are outlined in the following description of priority areas and in the next major section.

Priority 1 Areas

These areas are of greatest importance and are most susceptible to disturbance. They include: spawning, overwintering and nursery areas of Arctic charr; walrus haulouts and adjacent areas used by walrus; coastal areas used by high concentrations of marine mammals, especially beluga; coastal areas used by the endangered bowhead; coastal and freshwater areas used by overfished Arctic charr stocks. Harvesting often occurs in these areas. These areas constitute less than 5% of the region.

Because of their crucial importance, these areas should be provided the ultimate degree of protection. They are candidates for inclusion in a system of protected areas. The department urges that no non-renewable resource development be permitted or facilities be sited in or adjacent to these areas. Shipping should not be permitted in such areas except if considered essential (e.g. community resupply) and even then temporal, spatial and other restrictions may be required.

The following are the priority 1 areas:

- Isabella Bay;
- Salmon R. and adjacent marine areas;
- the northern coastal area of Baffin and Bylot islands;
- the western coastal area of the Brodeur Peninsula;
- the coastal areas of Somerset Island including Bellot Strait, Creswell Bay, Cape Clarence, Garnier Bay, Cunningham Inlet, Aston Bay and M'Clure Bay;
- the northeastern coastal area of Prince of Wales Island;
- Wellington Channel, Queens Channel, McDougall Sound and Penny Strait including Brooman Point, Markham Point and Lacey Point, Bathurst Island;
- the southern coastal area of Devon Island,
- the eastern coastal area of Devon Island and the southeastern coastal area of Ellesmere Island;
- Cardigan Strait and Hell Gate;
- Lake Hazen;
- Stanwell-Fletcher Lake;
- spawning, nursery and overwintering areas of Arctic charr.

The Smith Sound, Jones Sound, Lancaster Sound and other ice edges are staging areas for marine mammals, and harvesting occurs from some of them. The ice edges should be provided appropriate protection. Most ice edges are included in this category. The main exception is the Lancaster Sound ice edge which varies extensively in position; that ice edge is in the priority 2 category for that reason.

These areas, except for the Salmon R. and adjacent marine areas, and spawning, nursery and overwintering areas of Arctic charr, which are incompletely known, are depicted on the map provided to the Regional Commission. A brief description of their importance is given in Annex 3.

Priority 2 Areas

These areas are of great importance. They include: feeding areas and migration routes of Arctic charr; feeding and overwintering areas and migration routes used by large numbers of whales in or adjacent to the Arctic Archipelago; areas where the highest number of seals occur in the Arctic Archipelago. Harvesting occurs in these areas.

These areas require stringent protection. Non-renewable resource development and facilities could be permitted if it was shown that there would be no long-term adverse effects on fish, marine mammals, their habitats or their harvesting, and stringent conditions may be applied to any proposed development. Shipping would be permissible but spatial, temporal and other restrictions may be required.

Although the department does not specifically propose these as candidates for inclusion in a system of protected areas, the department would support such proposals. For instance, the department fully supports Parks Canada's proposal for a national marine park in the Lancaster Sound area, and has recommended that serious consideration be given to including the centre of Lancaster Sound, a priority 2 area, within the boundaries of the proposed park.

The following are the priority 2 areas:

- the northeastern coastal areas of Baffin Island;
- northwest Baffin Bay;
- Smith Sound;
- Jones Sound;
- Lancaster Sound and Barrow Strait;
- Pond Inlet, Eclipse Sound and Navy Board Inlet;
- Admiralty Inlet;
- central Prince Regent Inlet;
- central Peel Sound, Franklin Strait and M'Clintock Channel;
- southwestern coastal area of Bathurst Island including Graham Moore Bay and Bracebridge Inlet;
- southeastern coastal area of Melville Island including Bridport Inlet;
- northern Eureka Sound;
- Tanquary Fjord;
- Lady Franklin Bay and adjacent areas;
- streams and lakes supporting Arctic charr other than those parts given priority 1 status.

These areas, except for the Arctic charr streams and lakes, are depicted on the map provided to the Regional Commission. A brief description of their importance is given in Annex 3.

Priority 3 Areas

These areas are of lesser known importance. The category is subdivided into two based on the extent of knowledge. The priority 3a areas are areas of general use by fish and marine mammals. They include: open ocean areas where marine mammals overwinter and through which they migrate; waters of the Arctic Archipelago where seals occur but where whales and walrus are relatively scarce; streams and lakes not supporting Arctic charr. The priority 3b areas are those for which information is insufficient to assign them to a priority 1, 2 or 3a category. Harvesting may occur at some 3a and 3b locations.

The 3a and 3b areas require general protection to conserve renewable resources and to protect the overall quality of the region's freshwater and marine environments. Non-renewable resource developments, facilities and shipping should be permitted subject to such conditions. Protection requirements for 3b areas may change as more information becomes available.

The following are the priority 3a areas:

- central Baffin Bay;
- Kane Basin;
- eastern Viscount Melville Sound, the Sverdrup Basin and Norwegian Sea;
- streams and lakes not supporting Arctic charr.

The following are the priority 3b areas:

- the northwestern portion of the region extending into the Arctic Ocean;
- southern Eureka Sound;
- Kennedy Channel.

These areas also are depicted on the map provided to the Regional Commission.

NON-RENEWABLE RESOURCE DEVELOPMENT AND SHIPPING

The previous section outlines the department's basic land use planning requirements for protecting fish and marine mammals from non-renewable resource development and shipping in the region. This section provides additional information related to oil and gas development, mineral development and shipping, all of which are actual or potential major uses of the region.

The general requirements of the department are:

- **the development of onshore and offshore facilities, ports and shore-bases is unacceptable in areas used by year-round or high seasonal concentrations of fish and marine mammals and which are considered habitats critical to the continued productivity and well-being of such populations;**

- **development elsewhere should occur at a rate commensurate with the demonstration of safety, reliability and environmental acceptability;**

- **the sensitivity of fish, marine mammals and their habitats and harvesting should be reflected in the location, design, construction and operation of facilities;**

- **any proposed development would be subject to the requirements of the land use plan, environmental impact assessment and regulatory processes;**

- **stringent protective measures may be imposed on activities to ensure the conservation of fish and marine mammal resources, their habitats and their havesting;**

- **research and monitoring may be required to identify specific important habitats, vulnerable species, protection requirements and any effects of a development.**

OIL AND GAS DEVELOPMENT

Hydrocarbon exploration and production is occurring in the Sverdrup Basin and exploration has been proposed for Lancaster Sound and Baffin Bay. Only limited data concerning the marine environment and inadequate technology to minimize risks are available for the latter two areas. Consequently any new exploration activity, including the implications of production, should be subject to environmental impact assessment and may be subject to stringent operating conditions. Specific concerns are the safety of offshore operations, minimizing effects on fish and marine mammals, minimizing the risk of oil spills, and establishing effective contingency plans in case of oil spills.

Based on its general requirements and assessment of the biological importance of areas, the department has reached the following conclusions:

- further exploration and development in the Sverdrup Basin can continue subject to environmental impact assessment and regulatory requirements necessary to protect the resources and environment of the area;

- there are specific areas (see priority 1 areas) which should not be open to any exploration activities;

- although the department would prefer that no drilling occur in Lancaster Sound, it has concluded that the risks are not sufficiently serious to warrant an outright ban or an indefinite extension of the current moratorium. If drilling is considered an acceptable activity in the area then it must be subject to the following requirements:

    - completion of a full environmental assessment and review for any specific proposal and its approval;

    - demonstration that the proponent can deal effectively with the physical environmental hazards of the region and can operate in a safe and responsible manner;

    - demonstration that the proposal is compatible with the maintenance of the fish and marine mammal resources of the region;

    - imposition of stringent environmental terms and conditions to ensure adequate protection for the important fish and marine mammal resources and their habitats;

    - imposition of appropriate research and monitoring requirements; and

    - the signing of an agreement-in-principle on the TFN land claim.

- proposals for drilling in other priority 2 or priority 3 areas should be dealt with according to the general requirements of those categories, environmental impact assessment and the regulatory process.

MINERAL DEVELOPMENT

Within the Lancaster Sound Planning Region there are two operating lead-zinc mines, the Nanisivik Mine located at Nanisivik on Strathcona Sound and the Polaris Mine located on the west coast of Little Cornwallis Island adjacent to Crozier Strait. Potential exists for the development of a third mine in connection with the large iron ore deposit near Mary River on Baffin Island. The two existing mines produce lead and zinc concentrates which are stockpiled during the winter and transported out through Lancaster Sound during the open water season. Both mining operations dispose their tailings into lakes which drain directly into the Arctic Ocean. Specific concerns are minimization of heavy metals reaching the marine environment from tailings ponds or during loading of ships, effects on marine mammals especially of associated shipping, abandonment, and the effects of increased local populations through angling pressure, sewage and waste disposal.

Based on its general requirements and assessment of biological importance of areas, the department has concluded:

- known potential mineral developments in the region are compatible with the conservation of fish and marine mammals as long as they adhere to good environmental operating practices established through environmental impact assessment and the regulatory process.

SHIPPING

For the most part, shipping in the Lancaster Sound Planning Region has been restricted to the open water season and has centred around community resupply, support for local industrial development activities and research. Tourist ships have begun traversing the region, and Canada is building the Polar 8 icebreaker. With the discovery of significant hydrocarbon deposits in the Beaufort Sea and Sverdrup Basin, scenarios have been proposed which would increase tanker traffic on a year-round basis through the Northwest Passage. A number of issues related to the interaction of shipping with fish and marine mammals have been identified:

- vessels may affect animals inhabiting close pack ice or fast ice, such as the ringed seal, through collisions or the destruction of birth lairs;

- ship noise may disturb marine mammals which might result in detrimental changes in behavior, and may increase the ambient noise level masking marine mammal vocalizations or interfering with communication and echolocation;

- icebreaking may change distribution patterns of marine mammals, affect hunting success, endanger hunters on the ice, make travel more difficult or result in the loss of hunting equipment; and

- spills of pollutants from vessels may alter the movements and migrations of fish and marine mammals or result in physiological effects or tainting.

Based on its general requirements and assessment of the biological importance of areas, the department has concluded:

- shipping should avoid priority 1 areas if possible;

- spatial, temporal or other restrictions may be required for shipping;

- demonstration projects involving operation of ice-strengthened tankers in medium to heavy summer ice conditions should incorporate appropriate research and monitoring programs to ensure that the project is managed well, risks and possible impacts are minimized, and maximum experience is gained for application to future large scale projects;

- only demonstration projects for year-round marine transportation of hydrocarbons may proceed at this time;

- demonstration projects should begin with ships carrying a non-polluting cargo such as liquified natural gas;

- expansion of marine transportation should be considered only after demonstration projects have been shown to be safe, reliable and environmentally acceptable;

- studies are required to further identify areas of critical fish and marine mammal habitat which may be affected by shipping activities associated with specific projects, and to assess aspects of sound production by vessels operating in the Arctic marine environment and the effects these sounds may have on marine mammal acoustics and biology;

- specific shipping projects may be required to develop adequate oil spill scenarios, spill impact assessments, contingency plans, clean-up procedures and compensation policies.

RESEARCH

Considerable knowledge of the marine and freshwater areas and their resources encompassed by the Lancaster Sound Planning Region have been amassed by the continuing science programs conducted by DFO, other agencies and industry. Although the current knowledge base is sufficient to permit informed judgements, further scientific investigations and continued monitoring are required for the production of accurate models and sound scientific advice for the prediction of impacts and management plans necessary for the conservation of the ecosystem and its resources. However, the immensity and diversity of the area present logistic and financial restraints which impede the gathering of adequate knowledge of the biological, physical and chemical components and their interactions in the ecosystem.

Investigations are required on the Arctic marine ecosystem and food-chain relationships to provide advice for the management and conservation of the ecosystem and its resources. Further investigations are required on marine mammal distribution, abundance and dynamics, and interactions with development and transportation. Studies also are required on important anadromous and marine fish, and invertebrate species, and detailed biological information is required from animals taken in native harvests.

Physical and chemical studies are required for definition of local systems and their importance to Arctic and global systems. Studies on ice formation, decay and movement are fundamental to marine transport and to the continuing development and updating of hydrographic information. The long range transport of toxic contaminants in relation to the Arctic ecosystem is another area which requires investigation.

Although a transportation corridor, 10-20 miles wide, has been surveyed through Lancaster Sound and some of the channels leading south from it, the Arctic in general is only 20% surveyed to modern standards. Since most proposed developments in the region would involve marine transportation, considerably more hydrographic surveying to a greater level of detail is needed.

Such studies are required but it should be stressed that they are expensive and will take time. For instance, in responding to the Beaufort Sea Environmental Assessment Panel's report, the department estimated that the research proposals addressed to the department would require 100 people, $150 million and up to 15 years.

The Regional Commission should recognize the inadequacies in the existing knowledge base, and take these into account in preparation of the plan. The plan should identify and reflect areas of deficiency, and should advocate and facilitate the gathering of additional information. As it becomes available, such information should be incorporated in revisions to the plan.

IMPLEMENTATION

The process for implementing the land use plan should be kept as simple as possible, should recognize existing responsibilities and should, whenever possible, use existing mechanisms. The main requirement of the process should be the commitment of the planning partners, the resource management agencies and other groups to implement the plan.

Specific project proposals should be subject to the requirements of environmental impact assessment and of the regulatory process, but these would be conducted and decisions made within the context of the regional land use plan.

Existing mechanisms should be used as far as possible. For example, the Environmental Advisory Committee on Arctic Marine Transportation should continue to advise the Arctic Shipping Control Authority on shipping proposals and environmental issues related to shipping.

Legislation should not be developed to implement the plan in general, although legislation would be required to implement specific aspects of the plan such as the establishment of protected areas. For example, a national park and marine park in the North Baffin-Lancaster Sound area should be established under legislation.

The settlement of the TFN Land Claim may offer another opportunity to incorporate aspects of the land use plan, such as some conservation areas, under legislation.

Because the conservation of the renewable resources of the region cannot be assured based solely on actions and decisions within the region, cooperation and joint efforts are required with neighbouring planning regions, Greenland/Denmark and on a global scale. Industrial projects and harvesting activities in neighbouring land use planning regions could affect renewable resources within the Lancaster Sound Planning Region. Marine mammals and possibly marine fish stocks migrate between Canadian and Greenland waters where many of these stocks may be harvested, so cooperation is required between Canada and Denmark to prevent overharvesting or adverse effects from other human activities. International cooperation is required to resolve global problems such as the long range transport of pollutants and man-induced climatic changes. All these requirements should be incorporated into the implementation process.

Once the land use plan is finalized, an action plan should be developed which clearly identifies the responsibilities of the various groups in implementing the plan, identifies specific actions that they should take, amd the timing of the actions.

The department will be closely involved in the implementation both through its direct actions and through the advice it provides to other agencies and groups. One action the department will undertake is the development of fisheries management plans for stocks of fish and marine mammals in the region; these plans will integrate present management, fisheries development, habitat protection and research requirements. These plans will reflect the land use plan to the extent possible.

MONITORING

Once implementation of the plan has begun, it will be necessary to ensure that each action has been implemented properly, expediently and with resolution of unforeseen problems. Its terms of reference identify that the NWT Land Use Planning Commission has the responsibility to monitor implementation. The NWT Land Use Planning Commission therefore should ensure that the responsible groups are undertaking the actions properly, and should report annually on this information to senior representatives of the Native, non-government and government organizations with interests in the region. The Commission also could use outside experts to resolve any implementation problems and to undertake any other appropriate actions to improve the implementation of the plan.

In addition to ensuring that the plan is implemented properly, it is necessary to ensure periodically that the plan is achieving its objectives. This requires a procedure which would culminate in the NWT Commission preparing a report every five years outlining whether goals are being achieved, and identifying any problems encountered. The Commission would act to resolve any issues identified through the process.

REVISION

The regional land use plan must evolve over time. Thus the plan should be modified whenever necessary.

This could occur when new knowledge becomes available, through the monitoring or audit processes, or as a result of other developments. Again, the NWT Land Use Planning Commission should continue to lead in amending the plan on the basis of information from other organizations with responsibilities for its implementation.

ANNEX 1

DFO MANDATE AND RESPONBILITIES

DEPARTMENTAL OBJECTIVE

The objective of the Department of Fisheries and Oceans is: to undertake policies and programs in support of Canada's economic, ecological and scientific interests in the oceans and inland waters, and to provide for the conservation, development and sustained economic utilization of Canada's fisheries resources in marine and inland waters for those who derive their livelihood or benefit from these resources; and to coordinate the policies and programs of the Government of Canada respecting oceans.

MANDATE

The Department of Fisheries and Oceans' mandate is derived from the Constitution Act, 1867, and the Department of Fisheries and Oceans Act, 1979. Section 91 (12) of the Constitution Act, 1867, gives the Government of Canada exclusive legislative responsibility for sea coast and inland fisheries. The Department of Fisheries and Oceans Act, 1979, defines the Minister's powers as extending to and including:

a) all matters over which the Parliament of Canada has jurisdiction, not by law assigned to any other department, board or agency of the Government of Canada, relating to:

   (i) sea coast and inland fisheries,
   (ii) fishing and recreational harbours,
   (iii) hydrography and marine sciences, and
   (iv) the coordination of the policies and programs of the Government of Canada respecting oceans; and

b) such other matters over which the Parliament of Canada has jurisdiction relating to oceans as are by law assigned to the Minister.

The department's responsibility to manage fisheries includes that for marine mammals and shellfish as well as for fish. The specific legislative basis for the management and protection of fish and marine mammals and their habitats is the Fisheries Act which contains provisions to control the harvesting of various species and to protect them and their habitats from the effects of human disturbances (see section on Departmental Legislation). In fulfilling its responsibility for fisheries, the distribution and abundance of fisheries resources are studied, their habitats identified, research is undertaken on their biology, on ecological processes and on environmental impacts, biological requirements for the protection and sustained usage of fisheries resources are stipulated, the effects of industrial developments are monitored, and the Fisheries Act and its regulations are enforced. Economic research is undertaken and various forms of assistance, including financial and marketing assistance, are provided to the fishing industry.

The department's ocean science mandate is derived from the Department of Fisheries and Oceans Act, 1979 and the Resources and Technical Surveys Act (Government Organization Act, 1966). The department acts primarily as a service and advisory agency applying oceanographic knowledge, data and information to the solution of a variety of marine problems including those arising from the exploitation, regulation and management of arctic hydrocarbon resources and shipping. It undertakes long-term or sustained (and often large-scale) process-oriented research and thereby provides the context within which industry undertakes site-specific and/or problem-oriented investigations. A major function is the provision of ocean information and advisory services to the regulatory agencies. It has been making significant progress in operating on ice-covered waters. As well, the department has an important support function with respect to environmental emergencies.

The department, has the national responsibility for the provision of hydrographic charts and related nautical productions. The Charts and Publications Regulations of the Canada Shipping Act require that ships navigating in Canadian waters have the latest edition of appropriate hydrographic charts. Adequate chart coverage is a prerequisite to the provision of navigational aid systems by Transport Canada. It has the responsibility for the publication of Tide and Current Tables and of Sailing Directions.

DEPARTMENTAL LEGISLATION

The department administers several statutes of which the Fisheries Act is most relevant. It is the main statute for the management and protection of fish and marine mammal resources and their habitats. Fish and marine mammal resources are managed primarily in accordance with the provisions of section 34 of the Fisheries Act, under which various regulations have been made to control harvesting of different species. The harvesting of fish in the Northwest Territories (NWT) and the Yukon is controlled under the Northwest Territories Fishery Regulations and the Yukon Territory Fishery Regulations. The harvesting of beluga, narwhal, seals, walrus and bowhead whale is controlled under the Beluga Protection Regulations, the Narwhal Protection Regulations, the Seal Protection Regulations, the Walrus Protection Regulations and the Cetacean Protection Regulations respectively.

Section 44 of the Act can be used to protect spawning and breeding areas of fish and marine mammals.

Fish and marine mammal resources and their habitats are protected from the effects of man-made disturbances primarily in accordance with sections 20, 28, 30, 31 and 33 of the Fisheries Act. Specifically, obstruction of fish passage in streams is controlled under section 20 and the Fishway Obstructions Removal Regulations; the need for fish guards on water intakes under section 28; the destruction of fish and marine mammal habitat under section 31; and the deposit of deleterious substances in waters frequented by fish and marine mammals under section 33. This last section is administered in part by the Department of the Environment, but the Minister of Fisheries and Oceans remains accountable to Parliament for the entire Act.

The use of explosives in water is controlled under both the Northwest Territories and Yukon Territory Fishery Regulations. The department has prepared guidelines to assist prospective applicants in preparing requests for authorizations to use explosives in water.

Under section 33.1(i) of the Fisheries Act the Minister of Fisheries and Oceans may require specific information from anyone who is carrying on, or proposes to carry on, any work or undertaking that results in or is likely to result in (a) the deposit of a deleterious substance in water frequented by fish or (b) the alteration, disruption or destruction of fish habitat. This may include plans, specifications, studies, procedures, analyses or other information related to the work. Also, under section 4, the Minister may authorize scientific studies to be carried out by people other than DFO staff.

The department administers sixteen other statutes. One of these is the Fish Inspection Act. The Fish Inspection Regulations under the Act provides for control of the quality of fish products for inter-provincial trade and export. This Act does not apply to marine mammals.

POLICY AND RELATED INITIATIVES

Three initiatives are clarifying how the department discharges its responsibilities in the Arctic. After comprehensive discussions, the department released the Fish Habitat Management Policy. The goals of the policy are to conserve, restore and develop fish habitat. A specific objective is to achieve an overall net gain of habitat productivity by balancing unavoidable habitat losses with habitat replacement on a project-by-project basis. The policy also places greater emphasis on integrated resource planning, such as Northern Land Use Planning, to reconcile interests of sectors competing for the use of an area of fish habitat, on public involvement in the decision-making process and on public consultation for major issues.

The department also is preparing an explicit statement on its Arctic fisheries policy. The proposal will recognize many current initiatives such as increased participation of resource users in the management of the fishery resources, development of fishery management plans, the importance of fisheries development, and consultation with affected clients, and non-DFO initiatives such as land claims and Northern Land Use Planning. Departmental clients will be consulted on the proposed policy before it is finalized.

Finally, the department is leading the development of an Arctic Marine Conservation Strategy for Canada. Considerable consultation has occurred with interested groups and consensus has been reached on the purpose and ten principles which form the basis of the draft strategy. The Minister intends to release the draft strategy as a discussion paper in September. The draft proposes several strategies necessary for conserving Canada's Arctic marine environment and its resources including: establishment of shared management processes; integrated resource planning and management; sustainable development of renewable resources; protection of the quality of the Arctic marine environment; establishment of a system of marine protected areas; the need for research; exchange of information; and provision of relevant education and training. The draft strategy recognizes the importance of Northern Land Use Planning for its implementation.

ANNEX 2

FISH AND MARINE MAMMALS OF THE LANCASTER SOUND PLANNING REGION

The department has provided the Regional Commission with maps of the distribution of important fish and marine mammals within the planning region. This Annex provides an overview of the maps and some additional information.

BOWHEAD

Recent estimates suggest that a few hundred bowhead occur in the area covered by the Lancaster Sound Regional Plan. These animals are all that remains from a stock that may have contained as many as 6 000 animals before commercial whaling. An estimated 28 394 bowheads were taken from the Davis Strait/Lancaster Sound area between 1719 and 1911.

Although bowhead may be sighted occasionally throughout the region they seem to occur with some regularity in areas such as Prince Regent Inlet, Admiralty Inlet, the Eclipse Sound/Navy Board Inlet complex and in particular Isabella Bay. Lancaster Sound is a major travel route to and from summering areas in waters of the Arctic Archipelago.

Bowhead currently are protected in Canadian waters.

NARWHAL

At least 20 000 narwhal are believed to frequent or pass through the region each summer. The Eclipse Sound/Navy Board Inlet complex, Admiralty Inlet, Prince Regent Inlet and Peel Sound are well known summer concentration areas for narwhal. Lancaster Sound and to a lesser extent Jones Sound are major travel routes for narwhal. The majority of the Canadian narwhal harvest, approximately 300 narwhals annually, is taken from the region during May-August.

BELUGA

The high Arctic beluga stock is thought to number between 6 300 and 18 600 animals of which 150-280 are harvested annually. During summer, beluga are common in most of the shallow bays on the fringe of deep sounds, inlets and fjords which contain major watershed drainages. Lancaster Sound and Jones Sound are major travel routes to and from the summering areas.

WALRUS

The current population of walrus that may frequent the region is unknown although the summer concentration has been tentatively estimated to be at least 1 000 animals. The average annual harvest for the area is in the vicinity of 15 animals and most walrus hunting is opportunistic.

SEALS

No clear picture of stock size is available for seal species within the region, although censuses have occurred in some areas.

Ringed seal numbers are thought to be stable and one estimate suggests that there are several million in the Canadian Arctic. Many areas are known to have substantial numbers of seal, or are good hunting areas; among these are Bridport Inlet, Aston Bay, Eclipse Sound and Admiralty Inlet.

Ringed seal are still a major part of the diet for most Inuit although the depressed market for sealskins has reduced hunting pressure. During the 1970's ringed seal accounted for approximately 86% of the seal harvest for the Northwest Territories and Northern Quebec.

There are no current population estimates for bearded seal, which occur in low densities throughout the planning area. A previous estimate suggested there may be as many as 185 000 bearded seal in the Canadian eastern Arctic. Approximately 4.5% of the seal harvest for the Northwest Territories and Northern Quebec during the 1970's was bearded seal.

There is no estimate of the number of hooded seals that occur within the region, but they do occur in low numbers throughout the eastern portion.

The number of harp seals in the region or the portion of the large eastern herd that might frequent waters in the region are unknown. Harp seal may occur sporadically throughout the area. They are known to pass through Eclipse Sound/Navy Board Inlet each year and have been seen in Prince Regent Inlet, Lancaster Sound and Admiralty Inlet. Harp seal are not hunted regularly within the region.

ARCTIC CHARR

The Arctic charr is widely distributed throughout the region and is the major fish species utilized in subsistence, commercial and sport fisheries. Information on the extent of individual populations is minimal, however, it appears that Arctic charr cannot withstand heavy exploitation. Overexploitation can result from the simultaneous use of a single stock for subsistence, commercial and/or sport fisheries. Major Arctic charr stocks occur in the Stanwell-Fletcher Lake area, the rivers at the head of Admiralty Inlet, the major rivers at the head of Eclipse Sound, and the rivers along the northeastern coast of Baffin Island.

MARINE FISH

Scanty information exists on the marine fishes of the region. However it is known that the Arctic cod is an extremely important link in the Arctic marine food chain, being eaten by birds, marine mammals and Arctic charr. Its importance is due to its role in energy transfer from copepods and amphipods to the larger predators. Arctic cod is very abundant in some areas but is seldom used by Inuit.

Greenland cod occur in the waters of the region but the extent of the resource is not known. The Greenland cod is fished commercially in waters outside the region.

Greenland halibut, northern striped pink shrimp, Atlantic cod and roundnosed grenadier are fished commercially outside the region off southern Baffin Island or further south. The extent to which these species may penetrate into the Baffin Bay or channels of the Arctic Archipelago is unknown.

ANNEX 3

PRIORITY AREAS FOR FISH AND MARINE MAMMALS

The department has classified areas of the Lancaster Sound Planning Region into three categories based on their importance to fish and marine mammals, their habitats and their harvesting. The main text describes the criteria for placing areas into each category, identifies their general protection requirements, and lists the areas assigned to each category. This Annex provides specific information on the importance of the priority 1 and priority 2 areas to fish and marine mammals.

PRIORITY 1 AREAS

Isabella Bay

Recent studies conducted under the auspices of the World Wildlife Fund's 'Whales Beneath the Ice' Program have identified the Isabella Bay area as a very important summer and fall feeding area for bowhead whale.

Salmon River and Adjacent Marine Areas

The Arctic charr stock of the Salmon River has been overfished. This area requires maximum protection to allow the stock to recover.

North Coasts of Baffin and Bylot Islands

The north coasts of Baffin and Bylot islands are used extensively during the migration of marine mammals from Lancaster Sound to overwintering areas in Baffin Bay and Davis Strait. Beluga and narwhal frequently migrate along a very narrow corridor, often within a kilometre of the coastline. Terrestrial haulouts for walrus are located at Cape Crawford on the Brodeur Peninsula and on the northwest tip of Bylot Island. As many as 150,000 harp seal have been observed migrating along the north coast of Bylot Island to summer feeding areas. The spring ice edges at the mouths of the sounds and inlets are important. For instance, the ice edge at the eastern entrance to Eclipse Sound is frequented in spring by large numbers of narwhal awaiting the breakup of the fast ice in order to gain access to the rich feeding areas within the Eclipse Sound complex, and an important spring narwhal hunt is conducted from the floe edge.

West Coast of Brodeur Peninsula

Beluga concentrate during summer in the many estuaries along the west coast of the Brodeur Peninsula.

Somerset Island Coastal Areas

The coastal areas of Somerset Island are important migration and concentration areas for beluga and seals and feeding areas for Arctic charr. See the information on Prince Regent Inlet and Peel Sound in the section on Priority 2 Areas. Several sites are of special importance.

Bellot Strait. High densities of ringed seal, and bearded seal are present year-round. Bowhead utilize the area during the summer.

Creswell Bay. The Creswell Bay area is a very important summer concentration area for beluga whale. It is suspected that the animals are feeding on Arctic charr from the Stanwell-Fletcher Lake-Ruggles River stock. Bowhead also frequent the Creswell Bay area during late summer.

Cape Clarence. A walrus haulout.

Garnier Bay. Beluga concentrations occur here during July.

Cunningham Inlet. Cunningham Inlet is important for beluga.

Aston Bay and M'Clure Bay. This area supports large numbers of ringed seal. Very high densities of seals have been observed hauled out on the ice to moult during late spring.

Prince of Wales Island Coast

See the account for Peel Sound in the section on Priority 2 Areas. Also, the Browne Bay area has high densities of ringed seal during the late spring haul-out and moulting period.

Wellington Channel, Queens Channel, McDougall Sound and Penny Strait

This area is used extensively by groups of walrus. Marine mammals range throughout this area during the open water season. Beluga and bowhead feed in the area during this period. Some areas are of special importance.

Brooman Point, Markham Point and Lacey Point, Bathurst Island. There is a walrus haul-out on Brooman Point occupied by about 300 animals. The adjacent waters are used as summer feeding areas.

Penny Strait and Queens Channel. Upwards of 300 walrus utilize the small polynyas in Penny Strait and Queens Channel. Bearded and ringed seal are abundant in these polynyas on a year-round basis. The Queens Channel area supports small numbers of bowhead during the summer.

South Coast of Devon Island

The entire south coast of Devon Island is important marine mammal habitat. Beluga enter Lancaster Sound by way of the shore lead system that develops each spring and frequent the embayments along the coast such as Bethune Inlet, Dundas Harbour, Croker Bay, Maxwell Bay and Radstock Bay. Narwhal arrive at the entrance to Lancaster Sound, from overwintering areas in southern Baffin Bay/Davis Strait. Walrus also utilize the shorelead during the course of their migration from overwintering areas in northeastern Baffin Bay. Current and historic walrus haulouts are located at Union Bay, Radstock Bay, Rigby Bay and Dundas Harbour. Bearded, ringed and harp seal use portions of the coastal zone of southern Devon Island as summering areas. During the fall, narwhal and beluga often concentrate their migration out of the area close to the south coast of Devon Island, but they do use the entire width of Lancaster Sound.

East Coast of Devon Island and Southeast Coast of Ellesmere Island

A large population of walrus inhabits the area and uses haulout sites along these coasts. Important ice edges form at the entrance to Smith Sound and Jones Sound where marine mammals congregate. See the information on Smith Sound and Jones Sound in the section on Priority 2 Areas.

Cardigan Strait and Hell Gate

Currents in the Cardigan Strait and Hell Gate area are responsible for the maintenance of year-round open water conditions. The area is utilized as overwintering habitat by variable numbers of walrus each year. Animals overwintering in this area travel to summering areas both within Jones Sound and Fram Sound in the shallow water south of North Kent Island. Terrestrial haulouts are also located in the Cardigan Strait/Hell Gate area.

Lake Hazen

Lake Hazen is Canada's northernmost lake and supports a population of Arctic charr.

Stanwell-Fletcher Lake

Lake Stanwell-Fletcher supports a major stock of Arctic charr.

PRIORITY 2 AREAS

Northeast Coast of Baffin Island

This area is important for the migration of beluga, bowhead, narwhal and seals especially in the fall. It is an important area for ringed seal in the winter. It is a summer feeding area for Arctic charr.

Baffin Bay

This area is an important migration route between Smith Sound, Jones Sound, Lancaster Sound and more southerly areas. It is utilized mainly by beluga, narwhal and walrus.

Smith Sound

An ice edge develops each spring between Cape Isabella on Ellesmere Island and Kap Alexander, Greenland. Narwhal, beluga and walrus, arriving from overwintering areas in the North Water, Baffin Bay and Davis Strait, congregate at the ice edge awaiting its breakup before they proceed to summering areas in Kane Basin.

Jones Sound

An ice edge forms across the entrance to Jones Sound in the spring. Narwhal, beluga and walrus arriving from overwintering areas in the North Water, Baffin Bay and Davis Strait congregate at the ice edge awaiting its breakup before they proceed to summering areas adjacent to Jones Sound. Narwhal and beluga also enter Jones Sound in the fall.

Lancaster Sound and Barrow Strait

Lancaster Sound and Barrow Strait are major spring and fall migration routes for the beluga, narwhal, bowhead, walrus and harp seal populations of the region. The areas along the coasts are of special significance (see Priority 1 Areas). The ice edges that form in Lancaster Sound and at the entrances to adjacent sounds also are very important as marine mammals congregate there in the spring and are harvested from the floe edges. Fast ice in the area provides habitat for ringed and bearded seals.

Pond Inlet, Eclipse Sound and Navy Board Inlet

This area is an important summering area for bowhead and narwhal. In addition, the waters are frequented on a year-round basis by large numbers of ringed seal, by bearded seal, and on a seasonal basis by harp and hooded seals. The major rivers entering these marine areas have important Arctic charr stocks which feed in the area during summer.

Admiralty Inlet

Admiralty Inlet is an important summering area for bowhead, narwhal and harp seal. Bowhead occupy the northern part while narwhal go as far south as Yeoman Island. Harp seal occur in the area during summer while ringed seals are resident year round, although not in as great a concentration as in other parts of the Lancaster Sound area. Many of the streams and rivers entering the southern end of Admiralty Inlet contain stocks of Arctic charr which feed in the area during summer. The spring floe edge at the mouth of Admiralty Inlet supports an important narwhal hunt.

Prince Regent Inlet

Prince Regent Inlet, to at least as far south as Bellot Strait, especially in the western half, is an important summering habitat for bowhead, narwhal and beluga. Summer concentrations of beluga have been seen at Elwin Bay, Batty Bay and Cranwell Bay.

Peel Sound, Franklin Strait and M'Clintock Channel

Narwhal and beluga frequent Peel Sound at least as far south as Bellot Strait during the summer months. A summer concentration of beluga has been seen in the vicinity of Savage Point. Bowhead utilize northern Peel Sound but may not penetrate as far south as narwhal and beluga.

Southwest Coast of Bathurst Island

This is a summer feeding area for Arctic charr. It supports large numbers of ringed seals and is especially used in the late spring as a haulout area for their moult.

Southeast Coat of Melville Island

This is a summer feeding area for Arctic charr. The fast ice of Bridport Inlet on the south coast of Melville Island serves as a late spring haulout and moulting area for ringed seal in Viscount Melville Sound.

Northern Eureka Sound

This is a summer feeding area for Arctic charr.

Tanquary Fjord

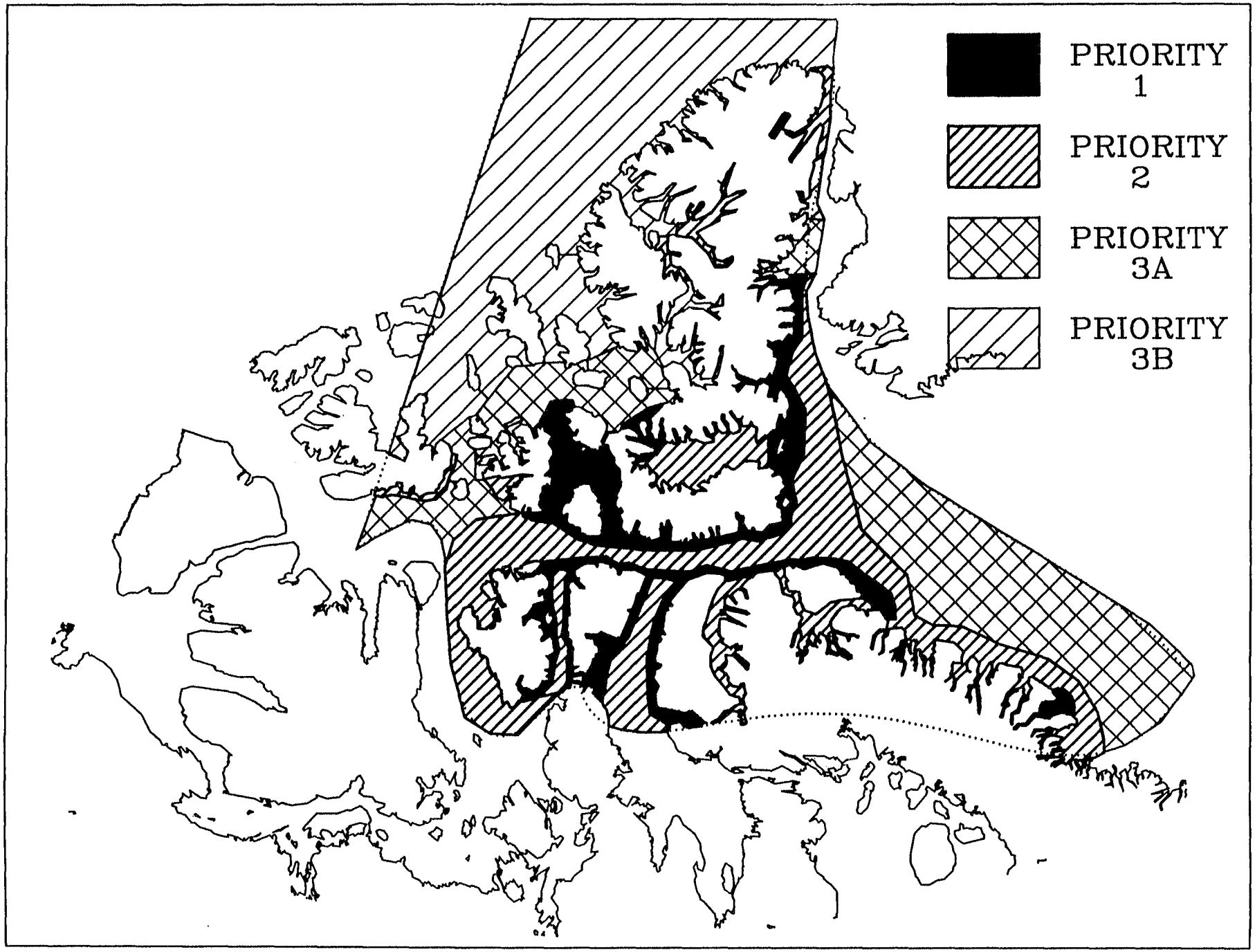
This is a summer feeding area for Arctic charr.

Lady Franklin Bay and Adjacent Areas

This is the summer feeding area for the Lake Hazen stock of Arctic charr.

Arctic Charr Streams and Lakes

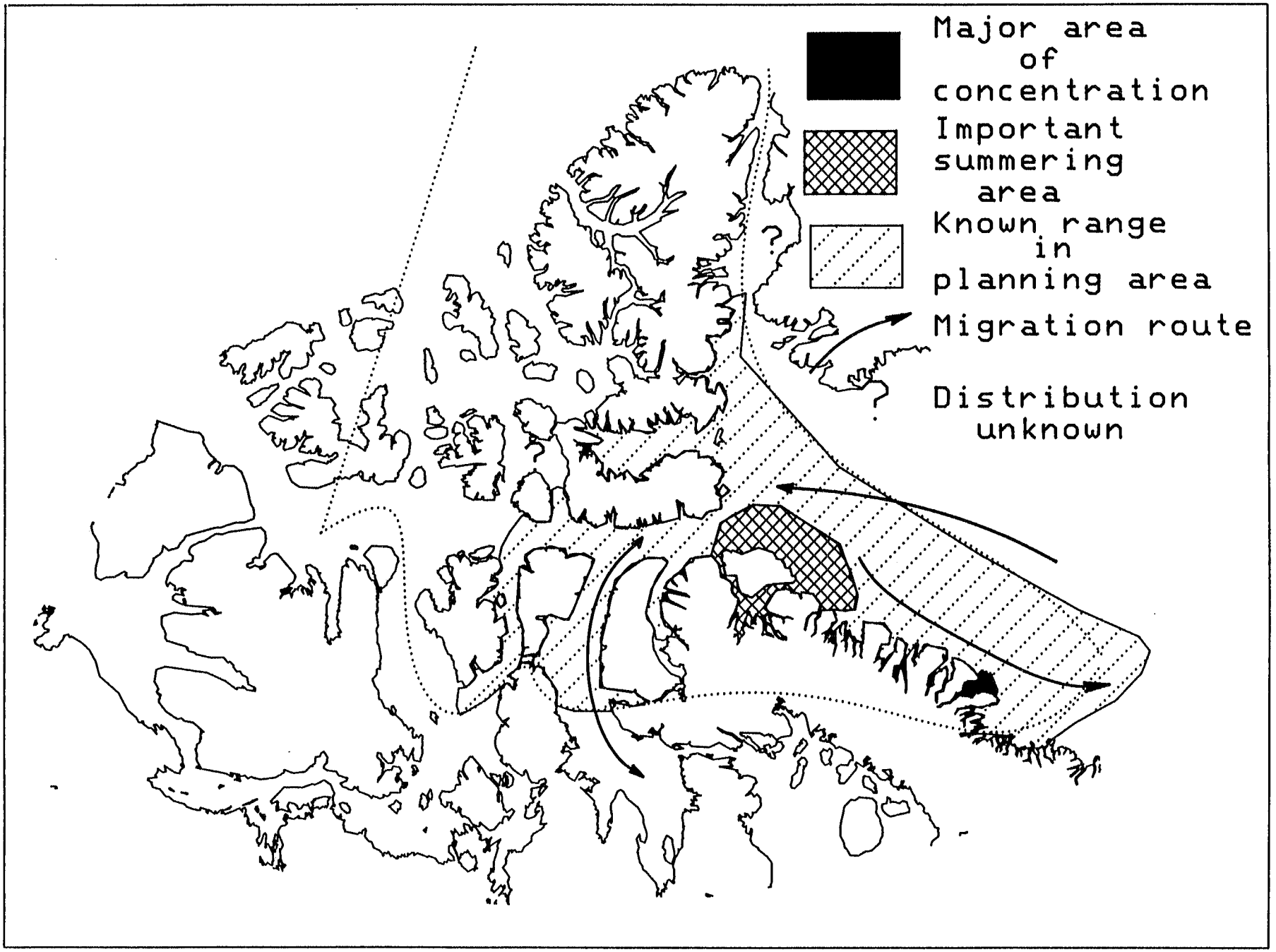
Most streams and lakes in the region support Arctic charr populations. Most important are the Stanwell-Fletcher Lake area on Somerset Island, the rivers at the head of Admiralty Inlet, the major rivers at the head of Eclipse Sound, and the rivers along the northeast coast of Baffin Island. Stanwell-Fletcher Lake, Lake Hazen and other spawning, nursery and overwintering areas for Arctic charr are given a priority 1 designation.



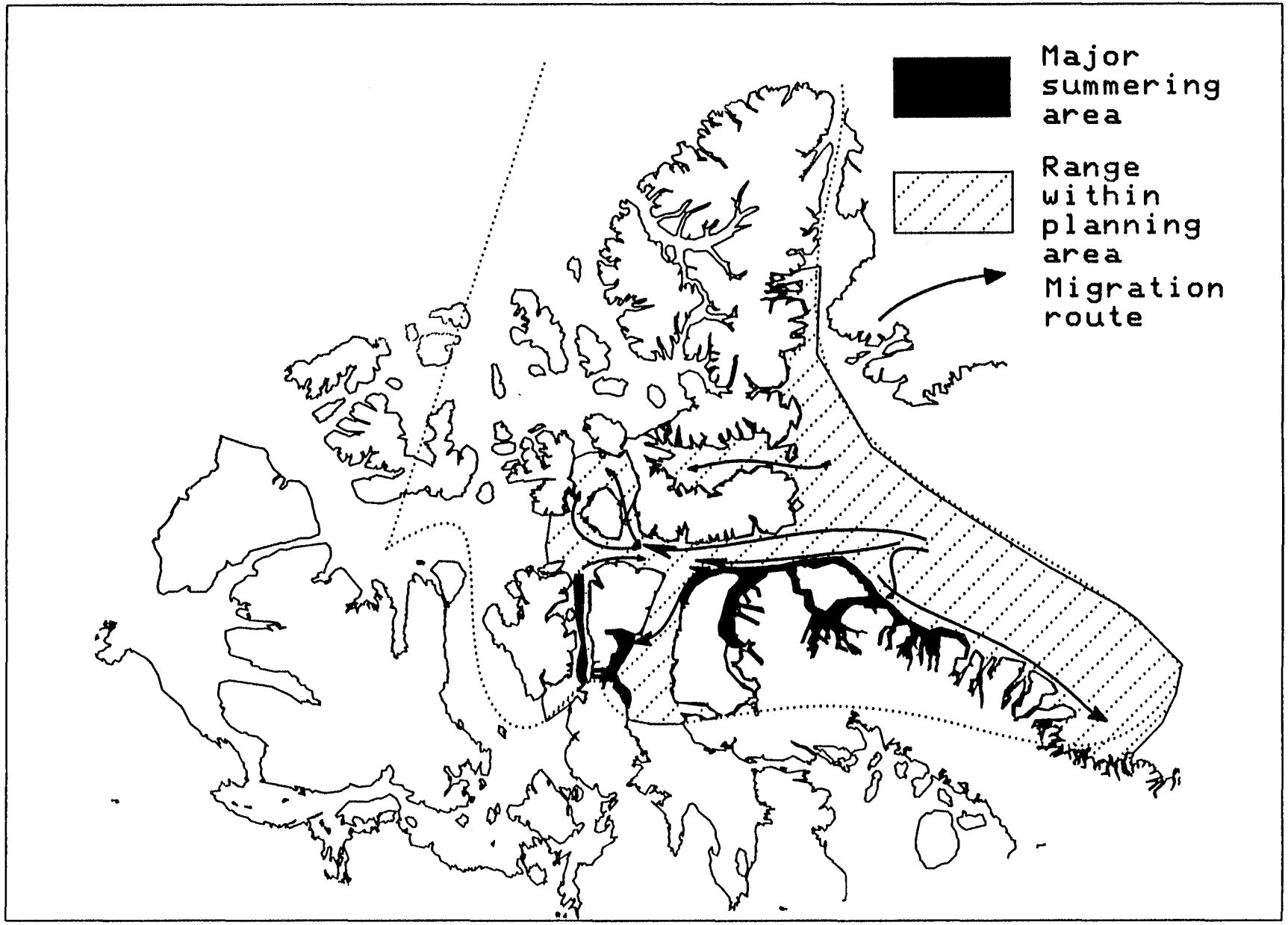
Lancaster Sound Land Use Planning : Marine Priority Areas

Part 2. Fishery Resource Maps for the Lancaster Sound Planning Region.

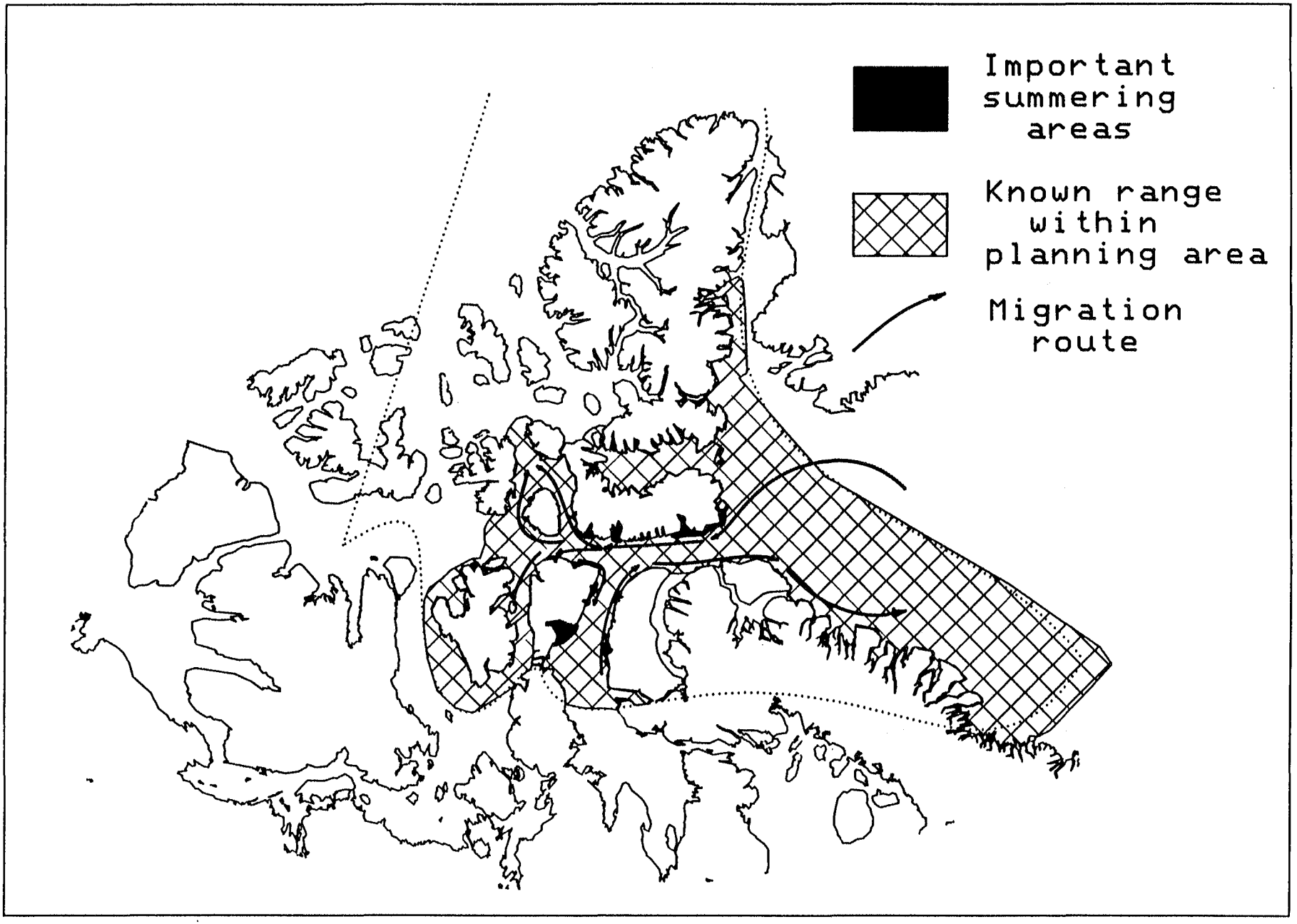
LIST OF MAPS



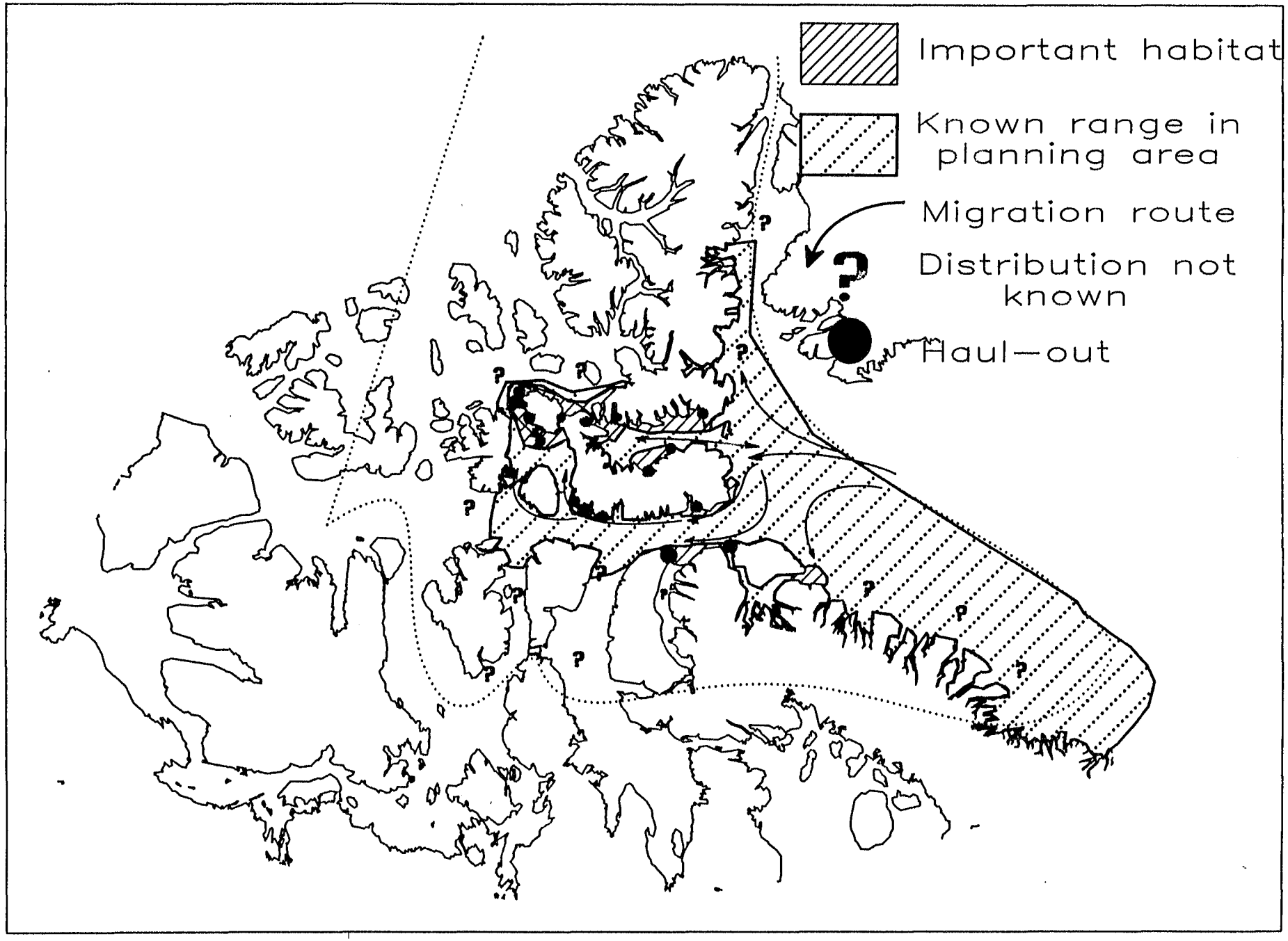
Bowhead distribution within the Lancaster Sound Planning Area



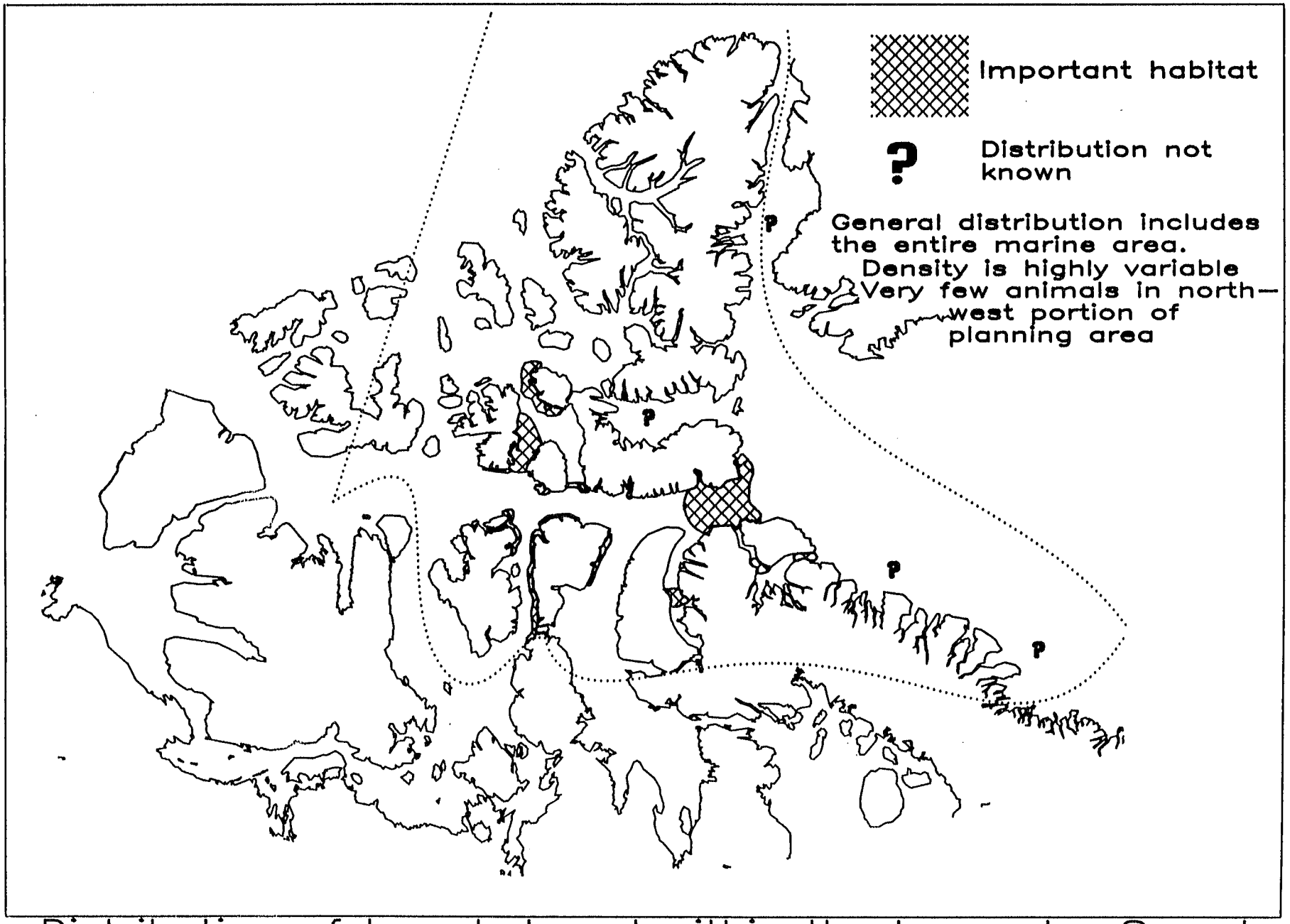
Narwhal distribution within the Lancaster Sound Planning Area



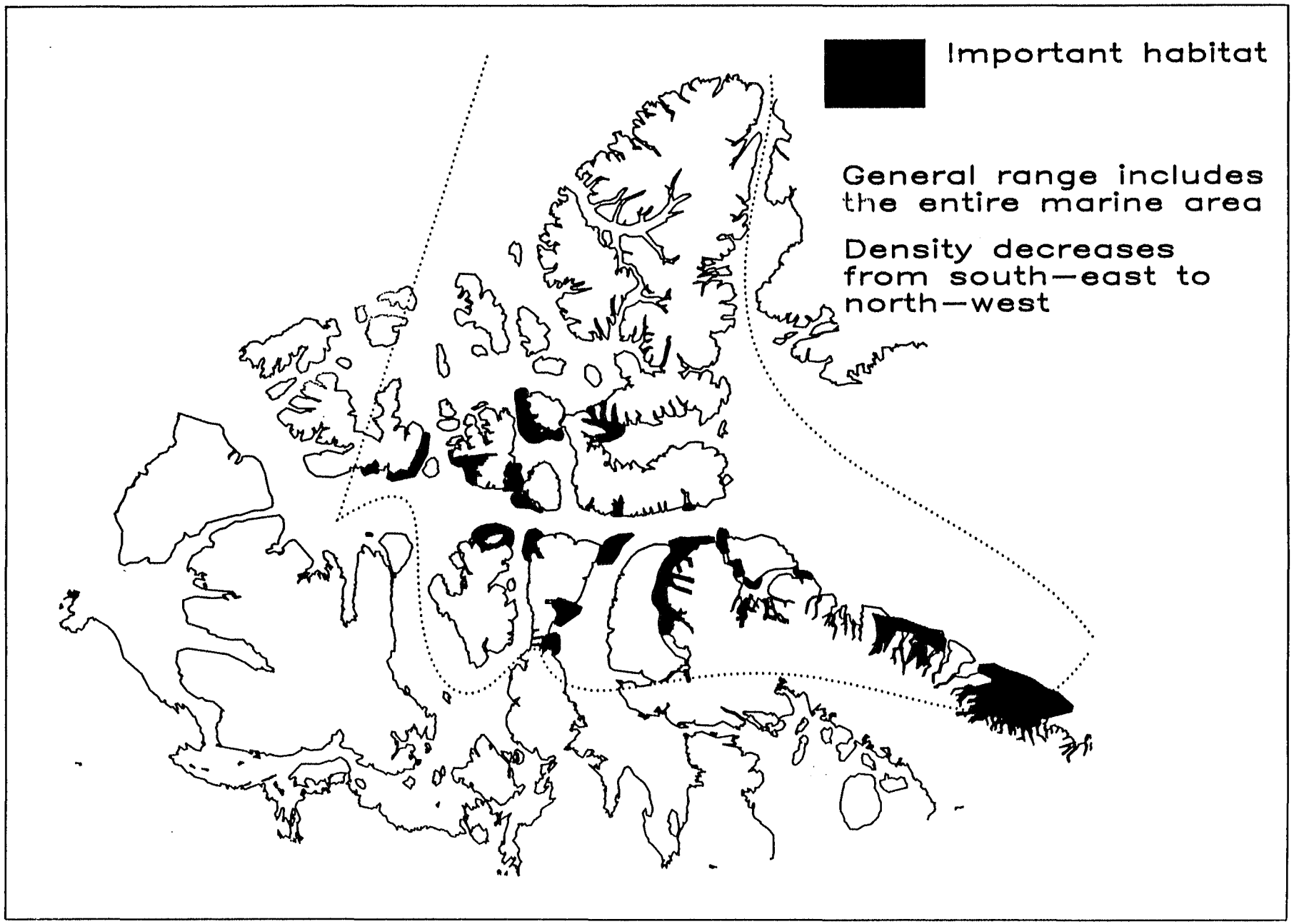
Beluga distribution within the Lancaster Sound PLanning Area



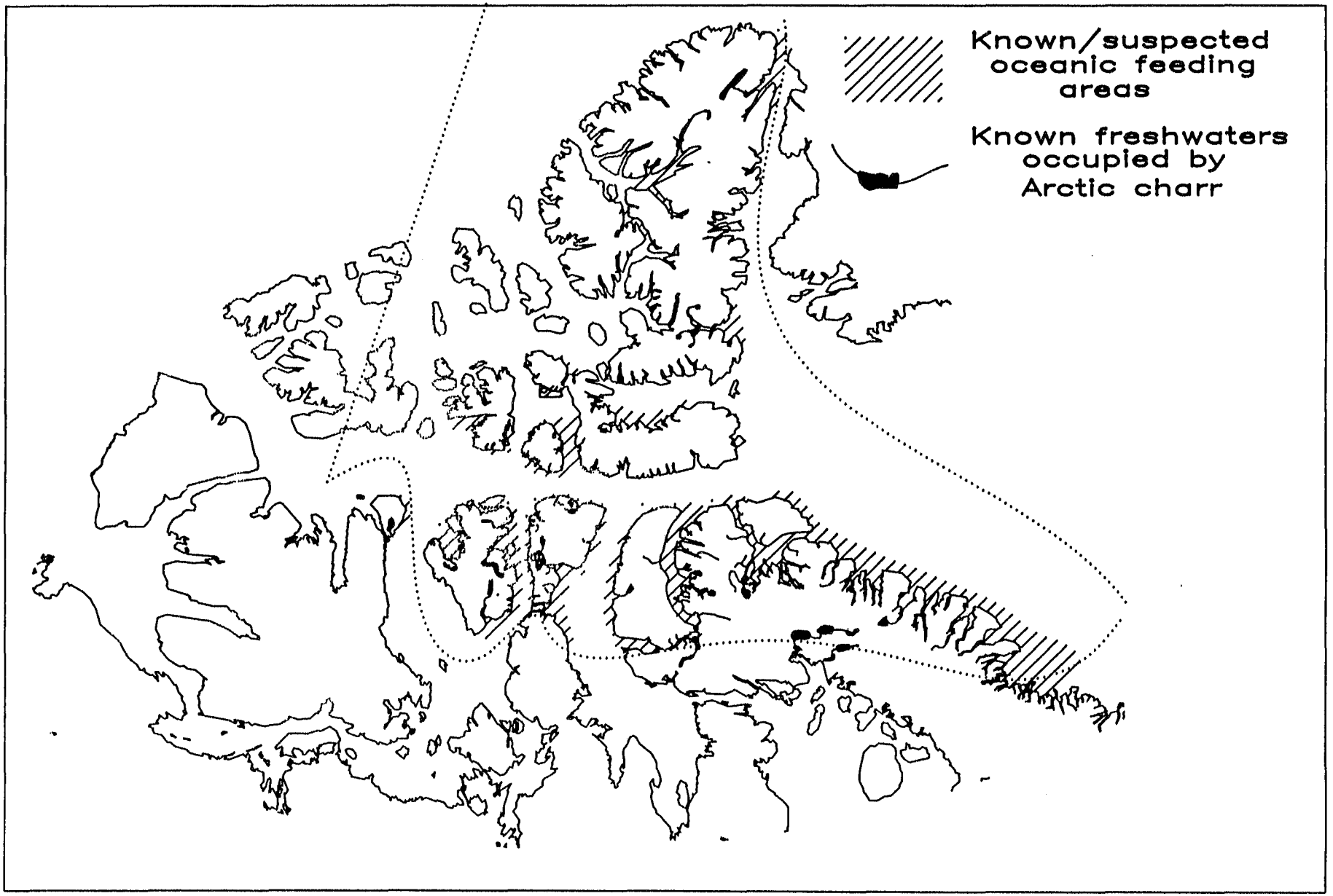
Walrus distribution within the Lancaster Sound Planning Area



Distribution of bearded seal within the Lancaster Sound Planning Area



Distribution of ringed seal within the Lancaster Sound Planning Area



Known distribution of Arctic charr within the Lancaster Sound Planning Area