

# Joint Environmental Impact Statement On Agreement Between United States and Canada East Coast Fishery Resources

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APRIL 1980

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DEPARTMENT OF STATE

DRAFT ENVIRONMENTAL IMPACT STATEMENT

ON THE AGREEMENT BETWEEN

THE UNITED STATES AND CANADA

ON EAST COAST FISHERY RESOURCES

APRIL 1980





Cover Sheet

- (a) Responsible agencies: U.S. Department of State (lead) and U.S. Department of Commerce.
- (b) Proposed action: Ratification and implementation of the Agreement Between the Government of the United States of America and the Government of Canada on East Coast Fishery Resources. This action will impact the U.S. fishery conservation zone in the Gulf of Maine and Georges Bank area.
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- (d) Statement type: Draft Environmental Impact Statement.
- (e) Abstract: This statement evaluates the environmental impact of ratifying and implementing the Agreement Between the Government of the United States of America and the Government of Canada on East Coast Fishery Resources. The Agreement establishes a management framework that has the potential to assure the long-term productivity of the fishery resources of the Georges Bank - Gulf of Maine area with little or no adverse economic impact to the users of the resource.
- (f) Dates: Comments must be received by \_\_\_\_\_ .

Summary

This statement analyzes the environmental impact of ratifying and implementing the Agreement between the Government of the United States of America and the Government of Canada on East Coast Fishery Resources, signed March 29, 1979. This bilateral fisheries agreement creates a framework that would enable the countries to coordinate fishery management decisions for stocks of mutual interest. The Agreement itself makes few management decisions regarding these resources. It requires that total allowable catches (TAC's) be established annually based on the best scientific information available. It vests the United States, Canada, or both countries with exclusive or primary management responsibility for each stock covered. It also establishes the shares of the TAC's to be caught by each country and provides for access by fishermen of each country to the fishery zone of the other, enabling fishermen of both to continue traditional fisheries.

Beyond these basic provisions, the Agreement leaves the development of specific management programs to the country with exclusive or primary management responsibility or to both countries in the case of four stocks. These programs would be developed in accordance with the Agreement's management principles which are patterned on the

national standards for fishery management contained in the Fishery Conservation and Management Act of 1976 (FCMA). In the case of stocks managed primarily by one country and those managed jointly, the Agreement provides for dispute resolution to guard against the possibility that deadlock may leave the stocks unprotected.

The need for the proposed action stems from the decision by both countries in 1976 to extend their jurisdiction over fisheries to 200 miles and to undertake national programs of fishery management within these extended areas. Because a number of important fish stocks migrate between areas they can be affected by fishing pressure applied in either country's zone. For this reason, U.S. and Canadian authorities perceived the need to coordinate fishery management decisions for such stocks.

Furthermore, the limits of the extended zones claimed by the United States and Canada overlap in four areas. The most pronounced overlap occurs in the Atlantic on the northeastern third of Georges Bank, one of the world's richest fishing grounds and traditionally one of significant importance to U.S. fishermen. In the absence of an established maritime boundary, fish stocks in this area are particularly prone to the risks of competitive overfishing.

The United States and Canada began discussions in 1976 aimed at creating a framework for coordinated fishery management. In August 1977 both governments appointed special negotiators. By October 1977 the countries had agreed on the basic elements and principles of such a framework. On March 29, 1979, the United States and Canada signed the agreement subsequently negotiated.

While negotiations were underway, both governments entered into a reciprocal fishery agreement for 1977 that continued traditional fisheries at recent levels. By the end of that year, when it became clear that more time would be needed to work out the long term arrangements, both governments agreed to extend the 1977 agreement with minor modifications for another year. In June 1978, however, Canada announced that it would not give effect to the 1978 interim agreement and suspended traditional U.S. fisheries in its undisputed fishery zone. The United States took reciprocal action. Since that time, fishermen of each country have been excluded from the undisputed zone of the other, although fishermen of both continue to operate in the disputed area on Georges Bank subject only to their respective domestic regulations.

The Agreement would reduce current risks of competitive overfishing of stocks in the Georges Bank disputed



zone and of stocks that range between the undisputed zones of the United States and Canada by assuring that the fishing activity of both countries for stocks to which both have access would be taken into account in managing these resources.

### Management Framework

The Agreement establishes a bilateral East Coast Fisheries Commission to serve as a forum for coordinating fishery management decisions. Stocks are divided into three categories that provide for graduated degrees of interaction between the countries.

Where possible, to facilitate management and to avoid the potential for disagreement over conservation goals, stocks would be managed exclusively or primarily by one country or the other. Thus, stocks listed in Category C would be managed exclusively by the United States or Canada. The managing country would be required only to consult with the other before implementing management measures. Stocks listed in Category B would be managed primarily by one country or the other. The country with primary management responsibility would develop management measures for these stocks that would enter into force regardless of an objection by the other country. For them to be modified, the

other country would have to demonstrate that they are "clearly inconsistent" with the Agreement's broad management principles. This requirement thus builds in a preference in favor of the measures developed by the country with primary management responsibility.

For all or part of the management measures for four species, Category A procedures would apply. These involve the greatest degree of management cooperation between the two countries. Management measures under Category A would be developed jointly in the Commission.

The Agreement also provides for conciliation and arbitration of disagreements over management measures for Category A and B stocks. This will assure that disagreement between the Parties will not result in deadlock and leave the stocks unprotected. As noted however, an objecting Party would have to meet a substantial burden of persuasion in seeking a modification of management measures developed by the country with primary management responsibility for Category B stocks.

The need for coordinated fishery management arose with extended jurisdiction and presumably will prevail indefinitely. For this reason, the Agreement undertaken with Canada has no termination provision. However, once the maritime boundary between the countries is delimited,

it may be desirable to modify the national percentage share entitlements initially agreed between the Parties. The Agreement recognizes this possibility and provides for periodic adjustments at ten-year intervals within certain maximum and minimum limits. In addition, the Agreement recognizes the need for flexibility in other areas, particularly with respect to changes in the management categories of the stocks covered, additions or deletions of stocks from the Annexes, variations in time limits and other procedural aspects involved in adopting management measures, and modifications in management strategy to foster innovative approaches to managing these resources and to allow the Parties to benefit from increased scientific knowledge of the fisheries.

The proposed action represents some departure from traditional bilateral fishery agreements with their limited management goals and limited contributions to conservation. It would establish a comprehensive system for conserving a broad range of fishery resources. It would have the flexibility necessary to evolve with increased scientific knowledge and developing theories of management. Above all, it would assure that pressure to maximize short term uses of fishery resources will not be allowed to threaten long term productivity.

### Issues to be Resolved

Four alternatives to the Agreement are considered. These are (1) no Agreement, (2) settlement of the maritime boundary, only, (3) negotiation of a resource agreement after delimitation of the maritime boundary, and (4) negotiation of a less comprehensive resource agreement pending delimitation of a maritime boundary.

### Areas of Controversy

The major controversies over the proposed action involve (1) the Agreement's lack of a termination provision, (2) certain percentage share entitlements, particularly the U.S. entitlement of the Georges Bank scallop stock, (3) the maximum and minimum limits within which entitlements may be adjusted at 10-year intervals, (4) the extent of Canada's role in managing stocks in waters claimed by the United States, and (5) Canada's 10-year entitlement to nine percent of the annual permissible commercial catch of Loligo squid in the U.S. zone versus 10-year U.S. entitlements to redfish in the Canadian zone.

### Major Conclusions

Current risks of competitive overfishing are substantial for a number of important stocks in the Georges Bank disputed zone. These include cod, haddock, pollock, yellow-tail flounder, and scallops. If the United States and

Canada do not act to protect these stocks, abundance is likely to decline over time causing significant economic dislocation for coastal communities in the United States which are dependent on them. In addition, the risks of competitive overfishing may also extend to other stocks to which both countries have access.

The proposed action would reduce these risks by requiring that both countries agree to total annual harvests from these resources and by specifying what percentage of the total each country annually may take. It would also create a mechanism through which the United States and Canada may coordinate management policies and develop a cooperative relationship in the area of fisheries management. Though such cooperation has occurred in the past in various international commissions and under certain bilateral agreements, extended jurisdiction now requires even closer cooperation over a broad range of fisheries management issues if stocks are to be conserved effectively. Moreover, the need for such a relationship is likely to become even more compelling as the fishing industries of both countries seek to realize the opportunities created for them by extended jurisdiction. Delimitation of the maritime boundary in the Georges Bank-Gulf of Maine area, although important to defining the precise areas of each country's

extended zone, will not alone foster such a relationship. Were the issues addressed by the proposed action set aside until after delimitation of the boundary, both countries could face significant resource conservation problems during the interim period, and evolution of the needed cooperative relationship between them could be seriously retarded.

With or without the proposed action, the United States and Canada will be required in future years to accept some restraints in the short term to assure long term resource productivity. The principal advantage of the proposed action is its assurance that both countries will agree to do so simultaneously so that short term sacrifices and long term benefits will be shared. If undertaken in a timely manner, both countries may avoid the prospect of resource depletion and consequent economic dislocation that currently exists in several important fisheries.

Table of Contents

	<u>Page</u>
Cover Sheet.....	i
Summary.....	ii
Table of Contents.....	xi
List of Appendices.....	xii
List of Figures.....	xiv
List of Tables.....	xv
I. Purpose and Need.....	1
A. Historical Background.....	1
B. Concepts Underlying the Proposed Action.....	7
II. Alternatives Including the Proposed Action.....	9
A. Proposed Federal Action.....	9
1. Annexes to the Agreement.....	9
a. Category A Management.....	10
b. Category B Management.....	12
c. Category C Management.....	20
2. East Coast Fisheries Commission.....	24
3. Management Principles.....	31
4. Dispute Settlement Mechanisms.....	34
5. Adjustment Provisions.....	36
6. Other Provisions.....	38
a. Limited Access.....	38
b. Scientific Cooperation.....	38
c. Reports of Catch and Location Data.....	39
d. Confidentiality of Statistics.....	39
e. Right to be Considered for Allocation of Surplus Fish.....	39
f. Fishing within Twelve Miles of the Coast.....	40
g. Fishing by Vessels of Third Party Countries.....	40
h. Recreational Fishing.....	41
i. Herring Transfers.....	41
j. Observers.....	41
k. Arrangements in Boundary Region.....	42
l. Port Access.....	42

	<u>Page</u>
B. Alternatives to the Proposed Action. . . . .	43
1. No Agreement . . . . .	43
2. Settlement of the Maritime Boundary, Only . . . . .	45
3. Negotiate a Resource Agreement After Delimitation of the Maritime Boundary. . . . .	46
4. Negotiation of a Less Comprehensive Resource Agreement Pending Delimitation of the Maritime Boundary . . . . .	49
III. Affected Environment . . . . .	50
A. The Physical and Biological Environment. . . . .	50
B. Areas of Special Biological Importance . . . . .	54
C. Human Environment. . . . .	72
IV. Environmental Consequences . . . . .	74
A. Impact of the Proposed Action. . . . .	74
1. Physical Environment . . . . .	74
2. Biological Environment . . . . .	77
3. Human Environment. . . . .	89
a. Introduction . . . . .	89
b. Short-Term Impacts . . . . .	94
c. Long-Term Impacts. . . . .	112
B. Environmental Consequences of Alternatives to the Proposed Action . . . . .	130
1. No Agreement . . . . .	130
2. Settlement of the Maritime Boundary, Only . . . . .	138
3. Negotiate a Resource Agreement Subsequent to Delimitation of a Maritime Boundary. . . . .	139
4. Negotiate a Less Comprehensive Resource Agreement Pending Delimita- tion of a Maritime Boundary. . . . .	145
V. Bibliography . . . . .	148
VI. List of Preparers. . . . .	154
VII. List of Reviewers. . . . .	156
VIII. Appendices . . . . .	Separate Volume Attached



List of Appendices

- I. Agreement between the Government of the United States of America and the Government of Canada on East Coast Fishery Resources
- II. Brief Biological Description of Species in Annexes to the Agreement
- III. Affected Environment
- IV. Profiles of Recent Commercial Fisheries by State and Selected Ports



List of Figures

	<u>Page</u>
Figure 1 - Gulf of Maine-Georges Bank Region; United States and Canadian Claim Lines and ICNAF Subareas and Divisions . . . . .	3
Figure 2 - Category "A" and "B" Management Decision Paths. . . . .	13
Figure 3 - Northwest Atlantic Area Map. . . . .	51
Figure 4 - Gulf of Maine-Georges Bank Region Surface Currents Within Slope Water and Coastal Water Masses . . . . .	53
Figure 5 - Distributional Charts of Commercially Important Species. . . . .	57
a. Argentine. . . . .	57
b. Cod. . . . .	58
c. Cusk . . . . .	59
d. Haddock. . . . .	60
e. Red Hake . . . . .	61
f. Silver Hake. . . . .	62
g. White Hake . . . . .	63
h. Herring. . . . .	64
i. Lobster. . . . .	65
j. Mackerel . . . . .	66
k. Pollock. . . . .	67
l. Redfish. . . . .	68
m. Scallops . . . . .	69
n. <u>Loligo</u> squid . . . . .	70
o. <u>Illex</u> squid. . . . .	71
Figure 6 - U.S. Sea Scallop Catch, Effort and Catch Per Unit Effort (CPUE), Subdivision 5Ze. . . . .	106
Figure 7 - Landings of Agreement Species Compared with Total Landings by State (Maine-Virginia) . . . . .	111
Figure 8 - Potential Long-Term Increase (or Decrease) in Average Annual Harvest. . . . .	122
Figure 9 - Allocation of Primary Management Authority by Value of Potential Harvest. . . . .	125
Figure 10 - Distribution of the Value of Potential Annual Long-Term Catch Shares. . . . .	128

List of Tables

	<u>Page</u>
Table I	Principal Spawning Areas and Times of Marine Fishes, Cape Sable to Cape Hatteras . 55-56
Table II	Provisional Estimate of Potential Long Term Sustainable Average Annual Catch Levels from Selected Stocks (Assuming Rebuilding and Conservation of Stocks) . . . 91-93
Table III	Comparison of Potential Catch with 1978 Total Catch and U.S. Entitlement at 1978 Total Catch Level with 1978 Actual U.S. Catch for Agreement Stocks . . . . . 97-98
Table IV	Illustration of Possible Value of the United States and Canada of Their Respective Shares of Stocks Covered by the Agreement in Terms of Potential Annual Average Long-Term Sustainable Catch Levels and 1978 Ex-Vessel Values . . . . . 117-120

## I. PURPOSE AND NEED

This statement analyzes the environmental impact of ratifying and implementing the Agreement Between the Government of the United States of America and the Government of Canada on East Coast Fishery Resources, signed on March 29, 1979 (Appendix I). This bilateral fisheries agreement with Canada provides for (1) the conservation and management of east coast fishery resources of concern to the U.S. and Canada and (2) reciprocal fishing access. A joint East Coast Fisheries Commission to provide for cooperative management of fish stocks is also established.

### A. Historical Background

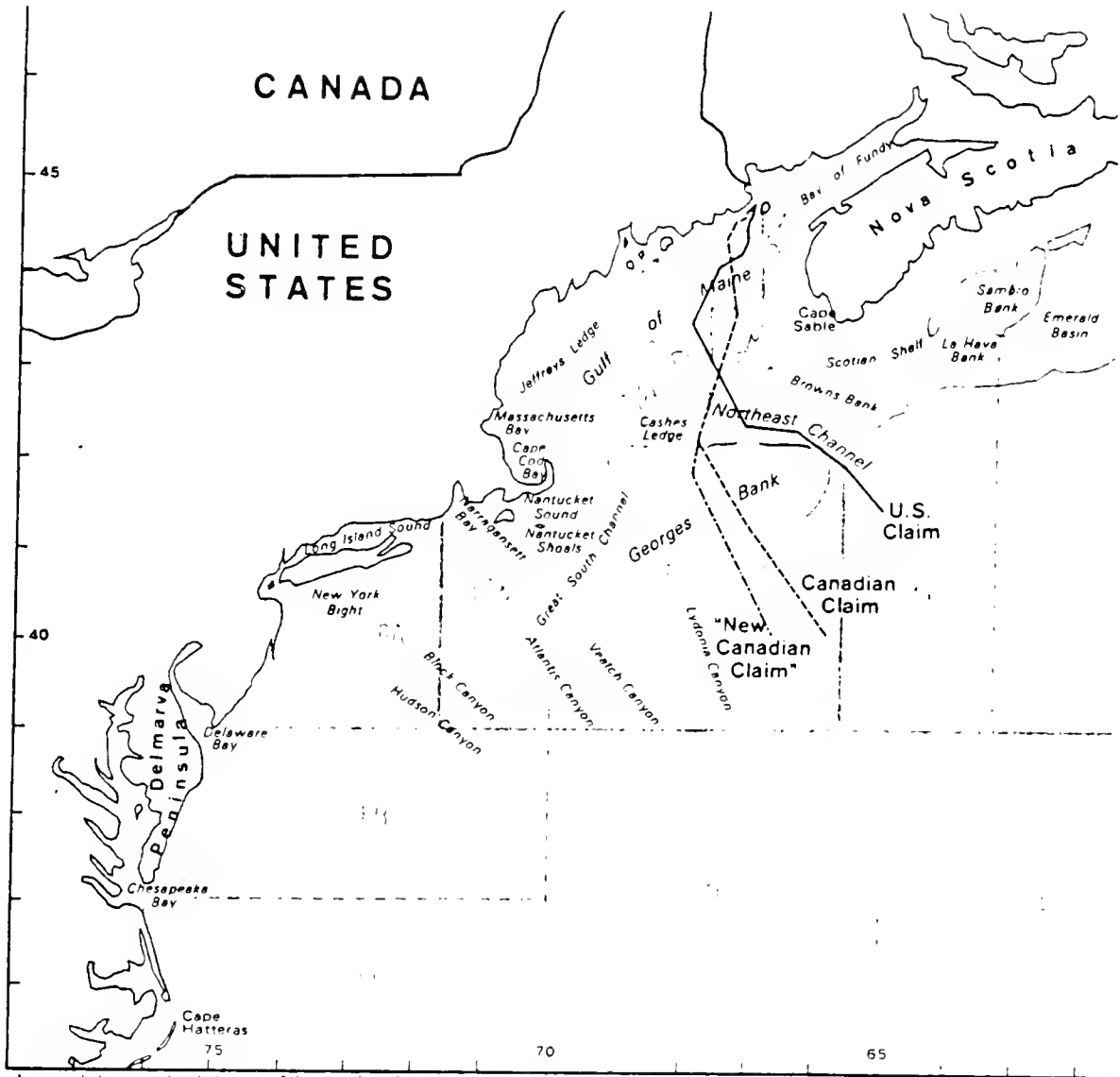
The United States has participated in the multilateral management of Northwest Atlantic fish resources since 1949, when it became a party to the International Convention for the Northwest Atlantic Fisheries (ICNAF). From 1950 until 1977, ICNAF and various bilateral agreements with nations fishing off the east coast of the U.S. served as the vehicles by which the United States sought to study, manage and conserve Northwest Atlantic fisheries.

These agreements proved inadequate, particularly in light of the trend toward extended coastal state jurisdiction over fishery resources. In 1976, Congress enacted the Fishery Conservation and Management Act (the FCMA) extending exclusive U.S. fishery management jurisdiction from 12 to 200 miles effective March 1, 1977.

The FCMA established a national program of management designed to prevent overfishing and promote the rebuilding of stocks, while furthering the realization of utilization of the full potential of the nation's fishery resources. The FCMA called for the negotiation of fishery agreements with countries wishing to fish off our coasts and for the negotiation of agreements establishing maritime boundaries with countries whose fishery zones are opposite or adjacent to our own.

Also in 1976, the Canadian Government announced extension of its fisheries jurisdiction to 200 miles effective January 1, 1977. In the Gulf of Maine area, outside the Strait of Juan de Fuca, at the Dixon Entrance and in the Beaufort Sea the published limits of U.S. and Canadian fisheries jurisdiction overlapped. This overlap was most pronounced on the northeast third of Georges Bank, one of the world's richest fishing grounds, and traditionally of major importance to U.S. fishermen (figure 1).

In view of these overlapping claims, both governments initiated discussions in late 1976 in an effort to resolve differences. Of more immediate concern, however, was the management of fishery resources in the boundary region pending delimitation of the boundary. Absent some agreement, both governments recognized that these resources



Automated base produced by the Office of The Geographer, US Department of State

Figure 1. Gulf of Maine - Georges Bank Region: United States and Canadian Boundary Claims.

could be subject to uncoordinated management measures, and both feared that such measures could lead to competition for fishery resources in the boundary region which might adversely affect conservation efforts. In addition, both governments recognized that, to the extent fishery resources of the boundary region are also present in areas where their respective exclusive fishery management jurisdiction is not disputed, management measures in such areas might easily be thwarted by uncoordinated management measures in the boundary region. Thus, for 1977, the United States and Canada concluded a reciprocal fisheries agreement which allowed fishermen of each country to continue traditional fisheries in the zone of the other and which limited to recent levels the catches the areas of undisputed jurisdiction.

In August 1977, President Carter and Prime Minister Trudeau appointed special representatives with instructions to negotiate an overall settlement by the end of 1977. Thereafter, Ambassadors Lloyd N. Cutler for the United States and Marcel Cadieux for Canada assumed direction of the negotiations.

In October 1977 the special representatives submitted to their governments agreed principles for a long term comprehensive agreement on fisheries. These principles included (1) the establishment of a joint fisheries commission, (2) the division of stocks into three categories



to provide for graduated degrees of coordinated management action, and (3) the creation of dispute settlement mechanisms, including the appointment of an impartial arbitrator.

As the negotiations progressed it became apparent that a comprehensive agreement could not be concluded prior to the 1978 fishing season. A second one-year interim fisheries agreement was negotiated and signed. Although the United States approved, and urged Canada to implement, the 1978 agreement, it was never brought into force due to differing interpretations of certain provisions. Reciprocal fishing was informally permitted until June, 1978. Thereafter, each country excluded fishermen of the other from areas of its undisputed jurisdiction. Fishermen of both countries continued operations in the boundary region where the claims overlapped, subject only to their respective domestic regulations.

In September 1978 Canada published a second boundary claim on Georges Bank. The United States Government promptly informed the Canadian Government that it considered the claim to be without merit and that any attempts by Canadians to fish beyond the initial Canadian claim would meet with U.S. enforcement action.

In November 1978, confirming the earlier fears of both governments, Canada relaxed the restrictions it had

placed upon its vessels in the groundfish fishery of the boundary region in response to what it perceived to be a similar relaxation of U.S. management measures for United States vessels. Thereafter, the Canadian catch of haddock, for example, exceeded by nearly 300 percent that tacitly understood to be the Canadian share. In the context of the negotiations, both sides had appeared to agree on the level of total catch that would be sound from the standpoint of stock rebuilding efforts. However, these levels were exceeded in 1978 and accusations continued to be exchanged as to which side was responsible.

By January 1979, the special representatives had reached agreement on all but certain details with respect to Northwest Atlantic fisheries issues. Final negotiations resolving these details culminated on March 29, 1979, with the signing of the Agreement Between the Government of the United States of America and the Government of Canada on East Coast Fishery Resources, as well as the Treaty Between the Government of the United States of America and the Government of Canada to Submit to Binding Dispute Settlement the Delimitation of the Maritime Boundary in the Gulf of Maine Area. The two agreements are expressly linked; neither can enter into force without the other.

Pending ratification of the treaties and their entry into force, east coast fishery relations between the two countries remain as they have since June 1978: fishermen of neither country may fish in the area under the undisputed jurisdiction of the other and no agreement exists with respect to management measures to be applied in the boundary region.

#### B. Concepts Underlying the Proposed Action

The major premise underlying the Fisheries Agreement is that stocks utilized by two or more nations can only be protected through a close partnership in cooperative management and regulation. Since finfish range over large areas, management measures applied by one country to a stock in a part of its range may affect the status of the stock in that part of a range within the jurisdiction of the other country. In addition, where stocks of the same species interact between the zones of the two countries, management measures applied by one country to stocks in its zone may affect stocks in the same species in the other country's zone. The northeastern portion of Georges Bank is the location of a major component of the fishery resource traditionally utilized by the United States. For many species, this is an area of major abundance. Some species live in the area all year and others occupy it seasonally. The absence of a mechanism for

coordinated management of these species threatens their future stability and that of fishermen, processors, and consumers who utilize these fish.

The management mechanism established by the Agreement is designed to ensure that each stock of fish will be regulated in a coordinated manner. The principles applicable to management are patterned on the FCMA's national standards. The entitlements set forth in the Agreement for each country to preserve historical fishing patterns and to promote conservation by reducing the risks of competitive overfishing.

## II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

### A. Proposed Federal Action

The proposed federal action is the ratification and implementation of the Agreement Between the Government of the United States of America and the Government of Canada on East Coast Fishery Resources (Appendix I). The Agreement would institute a comprehensive regime to coordinate management of fish within the fishery zones of the United States and Canada and enable the resumption of important traditional fisheries of each in the areas in which the other exercises undisputed fisheries jurisdiction.

#### 1. Annexes to the Agreement

Annexes A, B and C to the Agreement define fisheries in terms of stocks.\* Each of the stocks in the Agreement was selected on the basis of historical fishing patterns, management under ICNAF, and its distribution pattern in the Georges Bank - Gulf of Maine area. As a convenient way to identify stocks geographically, Annex D labels subareas, divisions, and subdivisions of the Northwest Atlantic Ocean in the same manner as under ICNAF (figures 1 and 3). By and

\*A stock is a subpopulation of one fish species whose members interact in a limited geographical area. A stock may be characterized by a unique spawning place or time and maintain a separate gene pool. Management measures applied to one stock will not necessarily impact on other stocks.

large, Annexes A, B, and C list those stocks which will be subject to Category A, B, and C procedures, respectively. These management procedures are set forth chiefly in Articles V, VI, and VII of the Agreement. The Annexes, however, contain the terms for fishing access and commercial entitlements and, where appropriate, designate the Party with management responsibility.

Category A, Management

Management of Category A stocks is truly a joint exercise of the two countries. Unlike Category B or C management, neither side is designated as the Party with primary management responsibility. Management measures are negotiated in the East Coast Fisheries Commission (see part 2 of this section). Thus the Commission is chiefly responsible for Category A management, subject to approval by the governments and to the binding dispute settlement process in case of disagreement (see figure 2a).

Those resources in Annex A are normally regarded as transboundary stocks. Outlined below are the stocks listed in Annex A and the specified share of the annual permissible commercial catch (PPC) to which the fisherman of each side are entitled:

- Atlantic mackerel in Subareas 3, 4, 5, and 6:  
60 percent for U.S. vessels and 40 percent  
for Canadian vessels.

- Pollock in Divisions 4V, 4W and 4X and Subarea 5:  
74.4 percent for Canadian vessels and 25.6  
percent for U.S. vessels.
- Cusk in Subdivision 5Ze:  
66 percent for Canadian vessels and 34 percent  
for U.S. vessels.

Management measures for cusk and pollock stocks will be adopted pursuant to Category A procedures. In the case of Atlantic mackerel, the annual total allowable catch (TAC) and PCC will be set according to Category A procedures; other mackerel management measures will be set according to Category B procedures, with each Party having primary management responsibility in its own zone. In addition, at the beginning of the fourth year of the Agreement, the parties will consider whether scientific evidence warrants setting the TAC for the northern or southern component of the mackerel stock pursuant to Category B procedures, with recourse to arbitration in the event of disagreement.

Annex A also contains a special provision for northern lobster in the boundary region pending delimitation of the boundary in the Gulf of Maine area. During that period management will be according to Category A procedures, and neither side will expand its fishing effort unless authorized by the Commission.

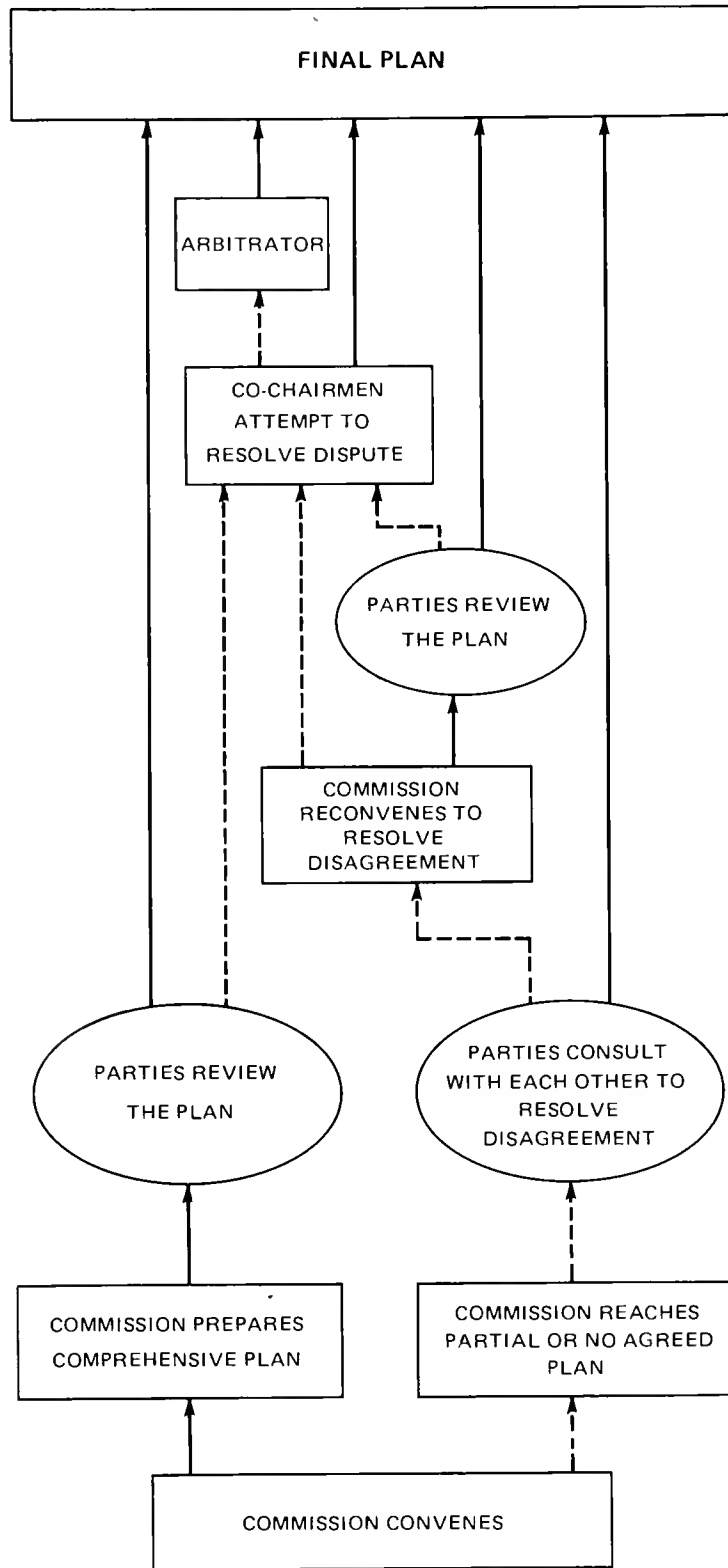
Finally, Category A procedures apply to management measures concerning size limits of sea scallops (e.g., shell size and meat counts). Because the rest of the scallop management measures are to be handled under Category B procedures the Agreement lists the scallop stock in Annex B.

Category B Management

Category B management involves the designation of one side or the other as the Party having the primary interest with respect to management for each stock. Most of the stocks for which Category B procedures will apply are listed in Annex B, with the exception of Atlantic mackerel which is listed in Annex A because the annual TAC and PCC will be set in accordance with Category A procedures. The Fisheries Commission's role under Category B management is chiefly to review proposals by the Party of primary interest. There is also provision for binding dispute settlement regarding Category B proposals, but unlike Category A dispute settlement, the Agreement builds in a preference in favor of the measures proposed by the Party of primary interest. Under this preference the measures developed by the party of primary interest will enter into force and remain in effect unless the Co-Chairmen or Arbitrator find them "clearly inconsistent" with the management principles set forth in the Agreement. (See Figure 2b.)



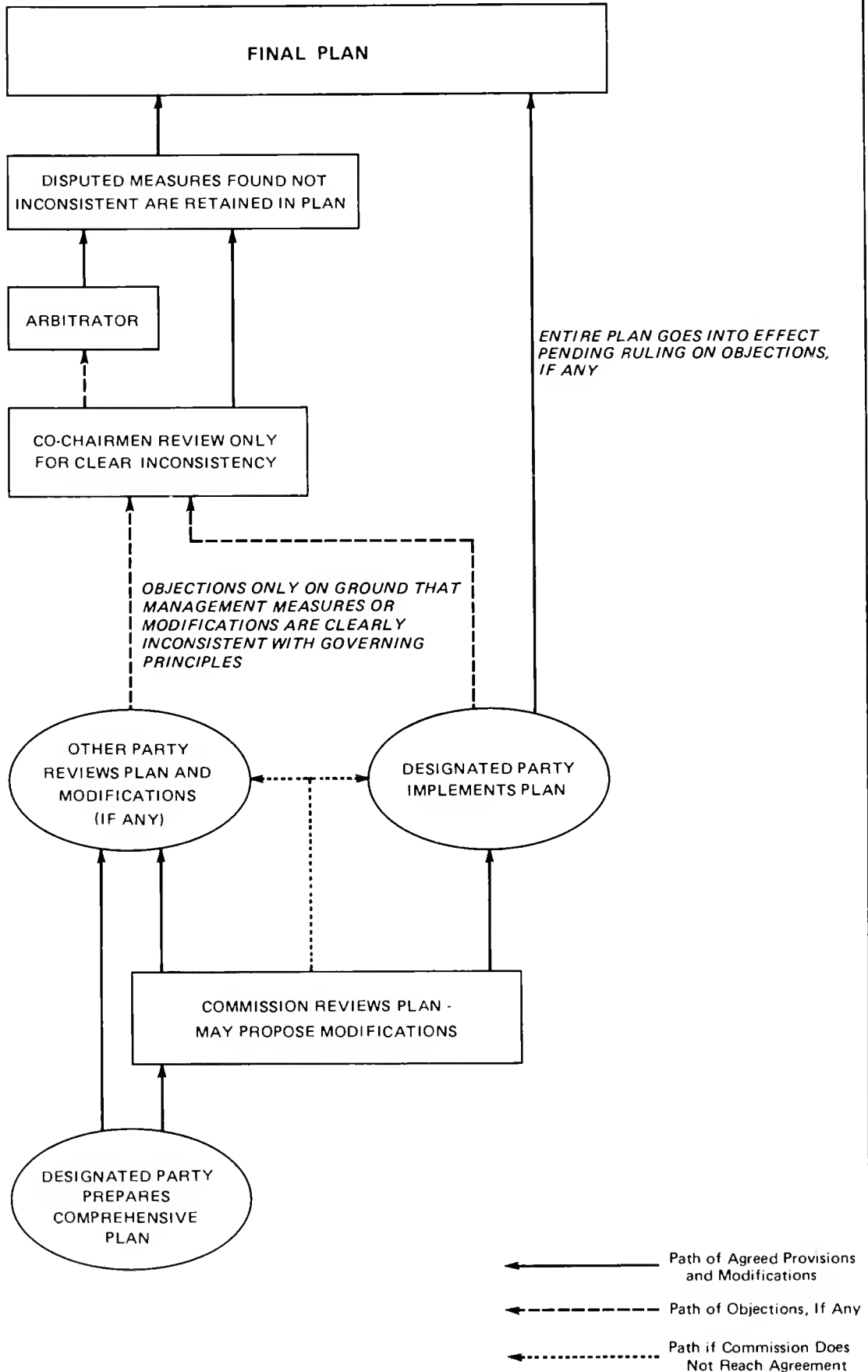
### CATEGORY "A" MANAGEMENT DECISION PATH



← Path of Agreement

← Path of Disagreement

### CATEGORY "B" MANAGEMENT DECISION PATH



It is essential to understand that the Agreement gives Canada and the United States equal power to object regarding annual management measures for Annex A and B stocks. The nature of the power depends on whether the stock concerned is under joint management responsibility pursuant to Annex A procedures, under the primary responsibility of the United States pursuant to Annex B procedures, or under the primary responsibility of Canada pursuant to Annex B procedures.

In the case of Annex A stocks, both Canada and the United States have the right to object to annual measures agreed upon by the Commission. Whenever such an objection is made, the Co-Chairmen or the Arbitrator will make the final decision on the management measures to be applied, after considering the viewpoints of each side. It can be anticipated that the governments will be reluctant to object to measures worked out in the Commission by their respective fishery experts (the majority of whom on the U.S. side will be Regional Fishery Management Council members), because the outcome of dispute settlement is beyond their own control.

In the case of Annex B stocks under the primary responsibility of the United States, Canada is in a subordinate position. The U.S. proposals for annual management measures will take effect unless the Commission agrees on modifications to which the United States does not object. Canada may object to the proposed or modified measures, but the measures as approved by the United States will remain in effect despite an objection unless and until the Co-Chairmen or the Arbitrator overrule them and substitute alternative measures. Canada's chances of prevailing in an objection are limited since neither the Co-Chairmen nor the Arbitrator may overrule the U.S.-approved measures without finding the measures to be "clearly inconsistent" with the Agreement's governing principles, which are patterned on the FCMA's national standards. Because of the flexibility of the governing principles, clearly inconsistent measures are likely to be encountered infrequently. As in the Annex A situation, it can be expected that Canada will be reluctant to exercise its objection power with respect to proposed measures or modifications that have been supported in the Commission by its own fishery experts.

Listed below, according to the Party having primary management responsibility, are the Annex B stocks for which the fishermen on each side are entitled to a specified share of the PCC:

(a) Stocks under the Primary Responsibility of the United States

- Atlantic herring in Division 5Y, excluding Grand Manan Banks and not including the juvenile herring fishery within three nautical miles of the U.S. coast: 100 percent for U.S. vessels.

- Atlantic herring in Division 5Z and Subarea 6:

FIRST THREE-YEAR PERIOD -- 2000 m.t. for Canadian and the remainder for U.S. vessels;

- SECOND THREE-YEAR PERIOD -- Canadian vessels may catch 2000 m.t. plus 50 percent of the portion of the PCC that exceeds 21,000 m.t., U.S. vessels may catch 100 percent of the first 21,000 m.t. of the PCC, less 2000 m.t., as well as 50 percent of the portion above 21,000 m.t. However, Canadian vessels will be entitled to one-third of PCC if the total PCC is 45,000 m.t. or above;

AFTER SIX YEARS -- one-third for Canadian vessels and two-thirds for U.S. vessels.

- Sea scallops in Subdivision 5Ze (Canada has primary management responsibility east

of 68° 30' west longitude and the United States west of 68° 30' west longitude, except for management measures related to size limits, which are determined in accordance with Category A procedures): 73.35 percent for Canadian vessels and 26.65 percent for U.S. vessels.

- Atlantic cod in Division 5Z:  
83 percent for U.S. vessels and 17 percent for Canadian vessels.
- Haddock in Subarea 5:  
79 percent for U.S. vessels and 21 percent for Canadian vessels.
- Silver hake in Subdivision 5Ze:  
90 percent for U.S. vessels and 10 percent for Canadian vessels.
- Red hake in Subdivision 5Ze:  
90 percent for U.S. vessels and 10 percent for Canadian vessels.
- White hake in Subarea 5:  
94 percent for U.S. vessels and 6 percent for Canadian vessels.

(b) Stocks Under the Primary Responsibility of Canada

- Atlantic herring in Divisions 4W and 4X

and in the portion of Division 5Y which encompasses the Grand Manan Banks, not including the juvenile herring fishery within three nautical miles of Canada's coast: 100 percent for Canadian vessels.

- Atlantic argentine in Divisions 4V, 4W, and 4X and in Subarea 5: 75 percent for Canadian vessels and 25 percent for U.S. vessels.
- White hake in Divisions 4V, 4W and 4X: 94 percent for Canadian vessels and 6 percent for U.S. vessels.

With respect to Atlantic herring stocks, there are two additional provisions not noted above. The first deals with access to the stock in Division 5Z and Subarea 6, limiting U.S. vessels to the area west of 66° west longitude and Canadian vessels to the area east of 68° 30' west longitude. The second provision calls for a review of the management categorizations of the herring stocks at the end of the first and second three-year periods, with the second review being subject to binding dispute settlement.

In general, vessels of both countries may have access to the areas in which the Annex B stocks are located. However, access for U.S. vessels to the white hake stock in Divisions 4V, 4W and 4X is limited to Division 4X.

Access to the white hake stock in Subarea 5, on the other hand, is limited for Canadian vessels to Subdivision 5Ze and that portion of Division 5Y which is in the Canadian fishery zone.

The final paragraph in Annex B pertains to Illex squid in Subareas 3, 4, 5, and 6. Canada has primary management responsibility for the portion of the stock in Subareas 3 and 4 and the United States the primary responsibility for the portion in Subareas 5 and 6. Pending delimitation of the boundary in the Georges Bank - Gulf of Maine area, vessels of neither side are to fish for Illex squid in the boundary region (unless otherwise agreed); access to the rest of the stock is limited for vessels of each Party to that Party's fishery zone.

#### Category C Management

Annex C lists stocks which occur primarily in one country's fishery zone but in which an interest of the other Party is accommodated under the terms of this Agreement. One Party or the other is invested with management responsibility. Selection of appropriate management measures is entirely within the discretion of the country having management responsibility. Except under special circumstances, Category C measures may not be implemented until the other side has had an opportunity for consultation at a Commission



meeting. The Party not having management responsibility cannot invoke binding dispute settlement under the Agreement to seek a change in management measures; neither the Co-Chairmen nor the Arbitrator has the power under any circumstances to impose its own management measures in lieu of the measures selected by the Party with management responsibility.

The Annex C stocks for which fishermen on each side are entitled to a specified share of the PCC for an indefinite period are broken down as follows, according to the country with management responsibility:

(1) Stocks under the Responsibility of the United States

- Atlantic cod in Subarea 5Y:  
98.4 percent for U.S. vessels and 1.6 percent for Canadian vessels.
- Atlantic redfish in Subarea 5:  
99 percent for U.S. vessels and 1 percent for Canadian vessels.
- Other Atlantic groundfish (e.g., yellowtail flounder) in Subarea 5: 99 percent for U.S. vessels and 1 percent for Canadian vessels.

(2) Stocks under the Responsibility of Canada

- Atlantic cod in Division 4W and Subdivision 4Vs: 98.6 percent for Canadian vessels and 1.4 percent for U.S. vessels.

- Atlantic cod in Division 4X, the offshore portion: 92.5 percent for Canadian vessels and 7.5 percent for U.S. vessels.
- Haddock in Division 4X: 90 percent for Canadian vessels.
- Other Atlantic groundfish in Subareas 3 and 4: 99 percent for Canadian vessels and 1 percent for U.S. vessels.

Fishing access for Category C stocks is the same for vessels of both sides, except that "other Atlantic groundfish" in the other Party's zone may be caught only incidentally.

Special provisions relate to Atlantic redfish stocks within undisputed Canadian jurisdiction, the Loligo squid stock (which is primarily within undisputed U.S. jurisdiction), northern lobster after determination of the boundary, incidental catch, and fishing by U.S. vessels in the vicinity of Grand Manan Island.

The right of U.S. vessels to fish for redfish in the undisputed portion of the Canadian fishery zone expires ten years after the Agreement enters into force. All of these redfish stocks are under Canadian management responsibility. During the ten-year period U.S. vessels will have the right to catch 35 percent of the PCC for the redfish stock in Divisions 4V, 4W, and 4X. In addition, U.S. vessels have a conditional interest of 10 percent in any portion of the

redfish stock in Divisions 4R, 4S, and 4T that Canada decides to set aside for vessels based outside the Gulf of St Lawrence. Finally, U.S. vessels have a right to take 600 metric tons (MT) of redfish from Subarea 3 stocks. Until the maritime boundary between France and Canada is determined (involving two French islands off the coast of Newfoundland), the 600 MT must be taken from the stock in Division 3-0 (figure 3). After the determination of that boundary, the United States and Canada may, upon application by the United States, agree to switch the entitlement to the stock in Division 3P.

The Loligo squid rights of Canadian vessels are limited to the ten year period following entry into force of the Agreement. The stock, located in Division 5Z and Subarea 6, is under the management responsibility of the United States. During the ten-year period Canadian vessels are authorized to catch 9 percent of the PCC. In order to curtail gear conflicts, the United States is authorized to impose more restrictive measures on Canadian vessels than on its own. However, such regulation shall be designed to give Canadian vessels an opportunity to catch the full entitlement without undue fishing hardship.

The northern lobster provision becomes applicable upon determination of the boundary in the Gulf of Maine area. The stock, located in Subarea 4 and 5, is to be under split management: each side will manage the portion in its own

fishery zone. Similarly, rights of fishing access for each country's vessels are limited to its own zone. However, parties may agree to reciprocal access, in which case questions of gear restrictions are subject to arbitration.

## 2. East Coast Fisheries Commission

Chapter I of the Agreement deals with fisheries management and provides for the establishment of the bilateral East Coast Fisheries Commission. The Commission will take into account the management programs of the states and fish caught in state waters. Each Party will appoint seven members to form that Party's national section. Commission members will serve at the pleasure of the appointing Party. Each Party will pay the expenses of its national section. All other expenses of the Commission will be borne by the Parties in equal shares. The Commission will determine an annual budget for submission to the Parties for their approval.

The Agreement provides that the Commission's headquarters will be located at a place to be determined by the Parties. It is anticipated that the headquarters will be located within the United States in the New England area.

The Commission will appoint an Executive Secretary and such staff as are agreed by the Parties. With the approval of the Parties, the Commission may establish a Scientific Committee and such other committees as are necessary to carry out its functions.

The Commission will meet as often as necessary to carry out its functions but must meet at least once each calendar year.

Decisions of the Commission are to be taken by the affirmative vote of both national sections. The Commission will:

(1) Determine the initial fishing year for Category A stocks within 45 days after entry into force of the Agreement;

(2) Review proposals submitted to it by the Party of primary interest concerning the initial fishing year for Category B stocks and agree on such proposals within 75 days after entry into force of the Agreement;

(3) Agree within six months after entry into force of the Agreement on historical ratios of each Party's annual recreational catch to total recreational and commercial catch;

(4) Determine annual management measures for Category A stocks in accordance with the management principles contained in the Agreement;

(5) Review annual management measures proposed by the Party of primary interest for Category B stocks to ensure their consistency with the management principles contained in the Agreement;

(6) Serve as a forum for consultation between the Parties with respect to annual management measures contemplated for Category C stocks by the Party having management responsibility;

(7) Recommend to the Parties the amendment of any provision of the Annexes to the Agreement, including the addition or deletion of stocks, the transfer of stocks from one Annex to another, and changes in fishing entitlements and access areas;

(8) Coordinate the collection of statistics and make recommendations to the Parties for cooperative research programs;

(9) Determine the amount to be deducted from the entitlement of either Party for the following fishing year or years should either exceed its annual entitlement in a given year.

In addition to the Commission members, the Commission will have two Co-Chairmen jointly appointed by the Parties. The Co-Chairmen may not be nationals of the same Party and will not form part of the national section of either Party. The Co-Chairmen will preside over Commission meetings and carry out their duties and responsibilities in an impartial manner. Co-Chairmen will serve initial terms of five years but may be reappointed. Either Party at any time may withdraw its consent to the service of a Co-Chairman; in such case, the Parties jointly will appoint a successor.

During Commission deliberations, the Co-Chairmen will facilitate and guide discussions, but have no voting power.

The Co-Chairmen will:

- (1) Attempt to resolve disputes if either Party objects to management measures recommended by the Commission for Category A stocks, or if the Commission is unable to agree on such measures;
- (2) Attempt to resolve questions referred to them by a Party which maintains that management measures proposed by the Party of primary interest for Category B stocks are clearly inconsistent with the management principles contained in the Agreement;
- (3) Make amendments of limited duration to management measures for Category A stocks and propose to the Commission the extended application of such amendments, in the event the stocks in question are threatened with serious and immediate harm due to unforeseen circumstances arising during the fishing year, or if there is an economic emergency that can be alleviated without significant adverse effects on conservation of the stocks;
- (4) Attempt to resolve any other question involving the application or interpretation of the Agreement referred to them by either or both Parties;

(5) Award appropriate relief if they decide that management measures proposed by the Party of primary interest for Category B stocks are clearly inconsistent with the management principles contained in the Agreement;

(6) Award appropriate relief in the case of a dispute involving the application or interpretation of the Agreement if they decide that a provision of the Agreement has been contravened.

The Agreement also provides that an Arbitrator be appointed jointly by the Parties. Should the Parties be unable to agree, the arbitrator shall be appointed by the Country of International Justice, in which case the Arbitrator may not be a national or permanent resident of the United States or Canada.

The Arbitrator will serve for a term of five years but may be reappointed. Either Party at any time may withdraw its consent to the service of the Arbitrator; in such case the Parties jointly will appoint a successor. The Parties will determine the remuneration and expenses of the Arbitrator, which costs will be included in the Commission's budget as joint expenses. Office facilities and services at the Commission's headquarters will be provided. The Arbitrator will be entitled to attend all meetings of the Commission



and will be provided with copies of all Commission minutes and documents when they are issued.

The Arbitrator will:

(1) Decide any dispute related to the determination of the appropriate initial fishing year for each Category A stock if either Party objects to the decision of the Commission or if the Commission cannot reach a decision;

(2) Decide any dispute related to the appropriate initial fishing year for each Category B stock if the Commission cannot agree to the proposal made by the Party of primary interest;

(3) Decide disputes related to the appropriate ratio of historical annual recreational catch to commercial catch if either Party objects to the decision of the Commission;

(4) Decide disputes related to extending the application of emergency measures for Category A stocks proposed by the Co-Chairmen;

(5) Decide disputes related to emergency measures for Category B stocks proposed by the Party of primary interest;

(6) Adjust entitlements for the following fishing year to restore the balance of fishing opportunities

if he decides that an amended management measure for a Category B stock will deprive a Party of its proportionate share of the catch during a given fishing year and that deprivation cannot be rectified during that fishing year;

(7) Redetermine entitlements within certain limits at ten-year intervals if such redetermination is requested by a Party and the Parties have been unable to agree on adjusted entitlements;

(8) Decide questions with respect to time limits or other administrative procedures contained in the Agreement if, at any time after five years from the entry into force of the Agreement, the Parties are unable to reach agreement on a requested change;

(9) Decide disputes with respect to management measures for Category A stocks that cannot be resolved by the Commission, the Parties, or the Co-Chairmen;

(10) Decide any disputes related to management measures for any Category B stock proposed by the Party of primary interest if the other Party has objected to the measures and the Co-Chairmen cannot resolve the dispute;

(11) Decide questions related to the application or interpretation of the Agreement that cannot be resolved by the Co-Chairmen on referral by a Party, and review decisions of the Co-Chairmen on such matters to ensure their consistency with his prior decisions;

(12) Determine the amount to be deducted from the entitlement of either Party for the following fishing year or years should either Party exceed its annual entitlement in a given year and should the Commission be unable to resolve the matter.

### 3. Management Principles

In order to guide the two governments and the Commission in formulating management measures for Category A and B stocks, Article X of the Agreement sets forth seven fishery management principles. The Co-Chairmen and Arbitrator are required to apply these principles in resolving disputes over Category A or B management measures. A few of the principles apply to Category C stocks, primarily to ensure equitable treatment of the fishermen of the Party not having management responsibility.

These principles closely parallel the National Standards of the FCMA. Slightly paraphrased, the management principles are as follows:

(1) Management measures for Category A and B stocks shall be designed to (a) achieve the optimum yield from each stock, taking into account stock inter-relationships and all other relevant ecological factors and the nature and extent of the economic and social interests of each Party in the stock, (b) bring about an exploitation rate that will maintain the long-term productivity of fishery resources (unless otherwise agreed), and (c) prevent overfishing of fishery resources, allow rebuilding of depleted stocks, and avoid irreversible or long-term adverse effects on fishery resources and the marine environment.

(2) Management measures for Category A and B stocks shall be based on the best scientific information available.

(3) Management measures for Category A and B stocks shall take into account demonstrated degrees of stock and species interrelationships so that the productive potential of related stocks or species is not seriously threatened.

(4) Management measures for Category A and B stocks shall take into account the need for efficiency in administration and enforcement, the avoidance of

unnecessary duplication, the need for maintaining the confidence of each Party in the administration and enforcement actions of the other Party, and the need to avoid disruptive changes in patterns of exploitation.

(5) Management measures for Category A, B, and C stocks shall provide to the fishermen of each side the opportunity to catch their entitlement to the stock in question.

(6) Management measures for Category A, B, and C stocks shall ensure access by each Party's fishermen to specified areas within the other Party's undisputed jurisdiction in order to catch entitlements, to the extent the Agreement permits such access.

(7) Management measures for Category A, B, and C stocks shall not discriminate in form or effect between the fishermen of the Parties (except for the Loligo squid stock, in which case Canadians vessels may be regulated more strictly than Americans).

Management measures adopted through the Commission's procedures are intended to be final and binding; however, recognizing that some flexibility is required in cases affecting serious and immediate harm to resources, Article VII provides for an expedited procedure for putting management measures into force.

#### 4. Dispute Settlement Mechanisms

The Agreement establishes a binding dispute settlement mechanism which is a cornerstone of the Agreement. The goal is to have the best resource management program in force and to guarantee that decisions will be made in a timely manner. This mechanism is an incentive to the national sections to reach agreement on management issues.

The Co-Chairmen and the Arbitrator are the central figures in the binding dispute settlement system. Their decisions on disputes pertaining to Category A and B management measures and to interpretations of the Agreement shall be binding on the Parties. Category C management measures are not subject to the Agreement's dispute settlement system.

The Arbitrator in most instances may not consider a dispute until the Co-Chairmen have attempted to decide the matter and have failed to reach agreement within the time limit stated in the Agreement. Notable exceptions are the expedited settlement procedures for disputes concerning initial fishing years, historical ratios of recreational catch to commercial catch, and emergency amendments to annual management measures. Under these expedited procedures a dispute will not be addressed by the Co-Chairmen but will go directly to the Arbitrator for resolution.

In the case of the redetermination of national entitlements, which may occur once every ten years, the Arbitrator will receive disputes directly from the Parties.

Dispute settlement for Category A management measures is distinctly different from dispute settlement for Category B measures. In a dispute related to annual management measures for a Category A stock, for example, the Co-Chairmen or the Arbitrator, as the case may be, will have the discretion to formulate whatever management measures they consider appropriate in light of presentations by both sides. Those measures will be legally binding on the Parties at the time of the decision. However, in the case of a dispute over management measures proposed for a Category B stock by the Party of primary management responsibility, the Co-Chairmen and the Arbitrator have a more confined role. Before they may substitute their own management measures for those proposed by the Party of primary interest, they must find that the proposed management measures are "clearly inconsistent" with the Agreement's management principles.

When questions regarding management measures are referred to them, the Co-Chairmen have fifteen days to reach agreement; on matters involving the application or interpretation of the Agreement, they must act within thirty days. In the case of the Arbitrator various time limits

apply, from periods of as little as fifteen days for emergency management measures during the fishing year to more than one year for redetermination of national catch entitlements. Normally the Arbitrator must decide on management measures thirty days after assuming jurisdiction over each question and on other matters ninety days after assuming jurisdiction.

Agreed decisions of the Co-Chairmen within the prescribed time limits are binding on the Parties, subject to the right of the Parties to agree on different relief or to refer the question to the Arbitrator on the basis of inconsistency with the Arbitrator's prior decisions. Similarly the Arbitrator's decisions are legally binding, although either Party may request review of a decision in light of new factors of decisive importance not previously known or discoverable. Within thirty days after making each decision the Co-Chairmen and Arbitrator must issue a reasoned opinion explaining the basis for decision.

##### 5. Adjustment Provisions

The Agreement is of indefinite duration and contains no provision for unilateral termination upon notice to the other Party. Because of this permanent character, the Agreement includes provisions for adjustment of certain rights of the Parties. The first such provision pertains to the right of either Party, at ten year intervals, to request a review of



any of the national catch entitlements for stocks covered by the Agreement. The second requires the review of any time limit or other administrative procedure, at the request of either Party at any time after five years following the Agreement's entry into force. Both provisions call for mandatory binding dispute settlement by the Arbitrator after a stated time for the end of negotiations -- after the first nine months of the ninth year of each ten-year interval in which a Party requests an entitlement redetermination and after six months from the date a Party requests review of an administrative procedure.

The entitlement redetermination provision contains a number of special conditions, outlined as follows:

(a) Each redetermined entitlement enters into force in the fishing year following the redetermination and remains in force until a subsequent redetermination.

(b) In general, a redetermination by the Arbitrator must reflect the average annual proportion of the stock in question which occurs in the fishery zone of each Party, except that the Arbitrator may moderate a change in entitlement to take into account economic and social ramifications.

(c) Notwithstanding the principle of proportionate distribution within the zones of the Parties, the Arbitrator's ability to reduce an entitlement is limited by two types of restrictions. First, there is a limit on the extent to which

an entitlement percentage may be decreased from one ten-year period to the next. If a Party's entitlement upon the Agreement's entry into force was fifty percent or more of the annual permissible commercial catch, that entitlement could be decreased by no more than ten percent at each ten year interval. If an entitlement upon the Agreement's entry into force was less than fifty percent, the periodic decrease could be no more than five percent. Second, there is a restriction applicable to the overall reduction of a Party's original entitlement as a result of successive redeterminations. This overall reduction may not exceed one-third of the original entitlement.

#### 6. Other Provisions

a. Limited Access. For any Category A, B, or C stock, the Agreement authorizes the establishment of a system for limiting access to the fishery or restricting fishing to certain vessels or fishermen. However, two conditions must be satisfied first: (1) the system must be directly related to conservation and must not be for the purpose of economic allocation and (2) notwithstanding the Agreement's dispute settlement provisions, the system must be expressly approved by both Parties.

b. Scientific Cooperation. The Agreement calls for the Parties and the Commission to share scientific data involving the work of the Commission. The Commission is authorized to collect statistics and make recommendations to the

Parties for cooperative research. The Agreement also encourages the continuation, and in appropriate instances the expansion, of cooperation in fishery research between the Parties.

c. Reports of Catch and Location Data. The Agreement requires fishermen of both countries to report catch and related data in a manner determined by the Commission. The Agreement also authorizes each Party, for fishing in its fishery zone, to require the other Party's fishermen engaged in such fishing to make reports of catch and location data at reasonable intervals.

d. Confidentiality of Statistics. Both the Parties and the Commission are required to preserve the confidential nature of the records or statistics of individual catches and individual company operations.

e. Right to be Considered for Allocation of Surplus Fish. The Agreement envisions two types of situations that may give rise to a decision by one Party, with respect to fish in which its own fishermen have a preferential interest, to allow fishermen of the other Party to harvest such fish. One type of situation involves a portion of an entitlement to a Category A, B, or C stock which is surplus to the granting Party's requirements; the other involves the surplus portion of a stock not in any of the three Agreement categories

(e.g., sharks, sand lance). In either type of situation the Agreement simply requires that the granting Party give consideration to a request by the other Party for an allocation. In short, it has the same practical effect as a Governing International Fishery Agreement (GIFA) negotiated pursuant to Section 201 of the FCMA. If U.S. fishermen will be unable to harvest the entire U.S. entitlement to a given Category A, B, or C stock, or the entire FCMA optimum yield of a fishery not covered by the Agreement, the United States may allocate the surplus portion among Canada and foreign countries that have entered into GIFA's. The Agreement places Canada on an equal footing with GIFA countries insofar as eligibility for an allocation of surplus is concerned.

f. Fishing within Twelve Miles of the Coast. With a single exception, the Agreement requires that commercial fishermen of one side, when inside the other side's fishery zone, conduct their fishing seaward of twelve nautical miles from the coast. The exception allows U.S. fishermen to fish in the area between three and twelve nautical miles from Grand Manan Island in the Canadian zone.

g. Fishing by Vessels of Third Party Countries. Each Party is authorized under the Agreement to permit fishing of a portion of its entitlement by vessels of third party countries. However, such third party fishing may occur only in

the undisputed portion of the granting Party's fishery zone, may be authorized only a year at a time, and must be subject to management measures at least as restrictive as those in force under the Agreement.

h. Recreational Fishing. Nationals and vessels of each Party are guaranteed access to all areas covered by the Agreement, subject to applicable regulations and permit and licensing requirements (except foreign fishing requirements set by the federal law of Canada or the United States). The historical ratio of recreational to commercial catch, to be determined in the first year after the Agreement enters into force, forms the basis for controlling the recreational harvest of Category A, B, and C stocks. Any recreational catch that exceeds a Party's historical ratio must be counted against the commercial entitlement for the same stock. Thus a Party may have to decide how much it is willing to permit its recreational fishery to expand, given the fact that expansion beyond the historical ratio will reduce the amount of fish available to its commercial fishermen.

i. Herring Transfers. The Agreement authorizes the continuation of at-sea transfers of herring between vessels of both Parties in the Gulf of Maine-Bay of Fundy area.

j. Observers. To monitor activities in areas under its undisputed jurisdiction, each Party has the right under the

Agreement to place its observers on the vessels of the other Party operating in these areas.

k. Arrangements in Boundary Region. Pending the delimitation of a maritime boundary, interim arrangements in the boundary region are to be continued. As between nationals and vessels of each Party, flag state enforcement will be the rule. No vessels of third party countries may be authorized to fish in the boundary region and both Parties are authorized to enforce against such vessels.

l. Port Access. The Agreement makes the customs ports of each Party available to nationals and vessels of both Parties for the purposes of purchasing bait, supplies, outfits, and fuel, and for effecting repairs. Such access is subject to general requirements for advance notice of port entry, availability of facilities, and the needs of domestic fishermen and their vessels.

B. Alternatives to the Proposed Action

The proposed action is inherently flexible, partly to encourage innovative resource management and to respond to changing conditions of the stocks and national objectives. Thus, the Agreement embraces an almost infinite number of access and management alternatives. There are, however, four alternatives to the proposed action that have been identified. These are:

1. No agreement.
2. Settlement of the maritime boundary, only.
3. Negotiation of a resource agreement after delimitation of the maritime boundary.
4. Negotiation of a less comprehensive resource agreement pending delimitation of the maritime boundary

1. No Agreement

This alternative implies a continuation of the current overlap of U.S. and Canadian management programs on the east coast. The establishment of 200-mile fishery zones in 1977 identified a serious difference between the two countries as to the location of the maritime boundary in the Georges Bank - Gulf of Maine area. Although it had been apparent since the 1960's that there was a difference between the United States and Canada on this point, the requirement of managing fisheries within defined areas greatly exacerbated the problem.

With the establishment of overlapping fishery zones on Georges Bank, the two countries entered into the 1977 Reciprocal Fisheries Agreement which set forth the following regime in the boundary region:

1. Vessels of both Parties would fish subject to flag state regulation.
2. As between the Parties, enforcement would be conducted by the flag state.
3. Neither Party would authorize fishing by vessels of third parties in the boundary region.
4. Either Party could enforce against third parties in the boundary region.

Since 1977, there has been no agreement in force relating to the boundary region although there continues to be a "gentlemen's agreement" on these three points. Conducting ourselves in this manner has allowed us to avoid actions which would be regarded by the other side as having a juridical content which could not be recognized. However, at the same time, it has meant that both countries have allowed their fishermen to fish in the boundary region without regard to the fishery activities of the other country on the same stocks in the same area. The fact that we are dealing with the claimed rights of both countries makes the matter very difficult and potentially explosive. The agreements defuse this difficult



situation. It has been suggested that the shared interest of the U.S. and Canada in the stability of the valuable east coast fishery would be sufficient for both parties to prevent competitive overfishing by their fishermen, and that through informal governmental consultations, greater management flexibility would prevail than under the proposed agreement.

However, Section I (A) of this statement narrates the failure of informal consultations during 1978 to produce interim agreement on fisheries conservation and management goals or to prevent competitive fishing for major stocks such as haddock, cod, pollock and scallops, leading to catches in excess of the expectations of either country. It also led Canada to expell U.S. fishing vessels from the Canadian zone.

Maintaining the status quo would continue to inhibit management of stocks as a unit throughout their range. Moreover, it would leave unresolved the fundamental issue, namely, how valuable marine resources which are highly vulnerable to overfishing, available to both countries, and in great demand are to be shared and managed so as to preserve their long term productivity.

## 2. Settlement of the Maritime Boundary, Only

This alternative proposes that only the boundary be resolved and that management of the marine environment including fisheries management should be carried out by the U.S. and Canada thereafter, each on its own side of the boundary. Resolution of the boundary alone would clearly define the maritime areas over which each party exercises fisheries jurisdiction, and thereby eliminate the present area of overlapping jurisdictional claims. Any boundary other than

that which fully adopts to the U.S. position would perpetuate the current situation in which certain valuable fishery stocks can be caught in both countries' fishery zones. Thus, the absence of a fisheries agreement would leave unresolved the problems noted above in connection with Alternative 1 of how such transboundary resources are to be shared and managed so as to preserve their long term productivity.

During the consultations leading to the signing of the proposed agreements concerning Atlantic fisheries and the maritime boundary in the Gulf of Maine-Georges Bank area, the special negotiators concluded that the only practical way to resolve the divergent boundary claims of the two countries was through submission of the issue to binding third party dispute settlement. A basic position of Canada has been that it will agree to binding adjudication of the maritime boundary only in conjunction with the implementation of a resource agreement that would survive the boundary determination. The United States cannot unilaterally submit the issue to third party settlement; Canadian agreement to accept such binding third party delimitation is required.

### 3. Negotiate a Resource Agreement After Delimitation of the Maritime Boundary

This alternative proposes that no management regime be constructed until the maritime boundary delimitation has been completed.

If the United States position were fully upheld in the boundary adjudication, the U.S. would be under no obligation

to allow Canada access to Georges Bank and would be able to manage unilaterally the stocks that do not range beyond Georges Bank or other Gulf of Maine areas under exclusive U.S. fisheries jurisdiction. But, as indicated in the discussion of alternative 2 above, herring, pollock, and mackerel would range across the boundary and require coordinated management by the United States and Canada.

On the other hand, if the Canadian boundary position should prevail, Canada could bar U.S. fishermen from the northeastern third of Georges Bank, an extremely important area for scallops, haddock, cod, yellowtail flounder, and many other species. Since almost all of the stocks on Georges Bank would be transboundary, the cooperation of Canada in managing these stocks would be essential. If the boundary established undisputed Canadian jurisdiction over an important part of the range of these Georges Bank stocks, it is reasonable to anticipate that both countries would insist on an equal voice in managing the Georges Bank stocks. The proposed action provides the United States with primary management responsibility for the great majority of Georges Bank stocks, no matter where the boundary falls (see Section II). It has been suggested that by waiting until a maritime boundary is determined the two countries would find it easier to work out a sharing agreement for those stocks occurring throughout the boundary region. This, however, would not necessarily be true. For example, a boundary dividing the

disputed northeastern section of Georges Bank would not determine the share of fish either country should catch on its side of the line. An intensification of effort might be anticipated from the fishermen of either country in any portion of the northeast peak of Georges Bank that remained available to them, if it would assist them in avoiding socio-economic dislocation. An illustration of the effect of an intensification of effort occurred in the fall of 1978 when Canadian vessels took a substantially higher share (39 percent) than in recent years of the total Gulf of Maine and Georges Bank haddock catch through concentrated fishing on just the northeast part of Georges Bank.

It is possible that a country having the predominant proportion of a particular stock on its side of the boundary might find that the other country, through more intensive fishing in a limited area, was taking a disproportionate share of the optimum yield from the stock in the interest of avoiding disruption to its established fisheries. This could make it even more difficult to negotiate a resource agreement after a boundary settlement than before. The Agreement, on the other hand, takes account of the eventual outcome of the boundary settlement and provides for an adjustment of entitlements partly based on the average annual proportion of each stock occurring in the fishery zone of each Party.

It is probable that a resource agreement negotiated subsequent to boundary delimitation would result in a management framework very similar to that in the proposed action. Access and shares might vary according to the location of the

boundary, but--under this alternative--U.S. fishermen would lose the protection provided to them by the Agreement against sudden changes in shares after the boundary delimitation.

Finally, there would be a hiatus of several years with continued overlapping management of important stocks on Georges Bank, which would present the difficulties mentioned in connection with Alternative 1.

4. Negotiation of a Less Comprehensive Resource Agreement Pending Delimitation of the Maritime Boundary

Implicit in this alternative is the recognition that deferral of a definitive resource agreement until after the delimitation of the maritime boundary requires an interim agreement to address some of the unresolved current and potential problems posed by separate or disjointed management of stocks now shared with Canada. Thus, this alternative may be viewed as a suboption of Alternative 3.

A limited agreement pending delimitation of the boundary has advantages over reliance on simple consultations to address present concerns regarding overfishing of fishery stocks. An interim agreement could bind both governments to whatever management arrangements could be agreed, as consultations between governments would not do.

However, recent experience since implementation of the FCMA suggests that a regime less comprehensive than the one established by the Agreement would not effectively conserve the resources. As noted above, efforts to implement such an interim agreement in 1978 were unsuccessful.

### III: AFFECTED ENVIRONMENT

#### A. The Physical and Biological Environment

The area encompassed by the proposed action extends off the Atlantic coast from Cape Hatteras to Newfoundland. Within this region, the waters lying above the continental shelf and slope to approximately the 100 fathom line are the most productive and important fishing areas. Relatively narrow at Cape Hatteras, the shelf widens markedly to the north to form Georges Bank (figure 2). The Northeast Channel, a major break in the shelf, divides Georges Bank from the Scotian Shelf and connects the deeper portions of the Gulf of Maine with the Atlantic. In the Gulf the shelf narrows considerably, but northeast of the Channel off Nova Scotia it widens again. Another major break occurs at the Laurentian Valley, the deep channel between Nova Scotia and Newfoundland. To the east and south of Newfoundland the shelf extends to its greatest breadth, forming the Grand Banks.

The southern portion from Cape Hatteras to Georges Bank is fairly uniform physically, with a continental shelf area influenced by many large coastal rivers and estuaries and incised by prominent shelf-edge canyons. Typically, the bottom is sand interspersed with large pockets of sand-gravel and sand-shell. Below 110 fathoms (200 meters, or m), the



substrate becomes a mixture of silt, silt-sand, and clay. As the continental slope deepens into the abyssal plain at depths greater than 1000 fathoms (1830m), clay predominates over silt and becomes the major substrate (MAFMC, 1978).

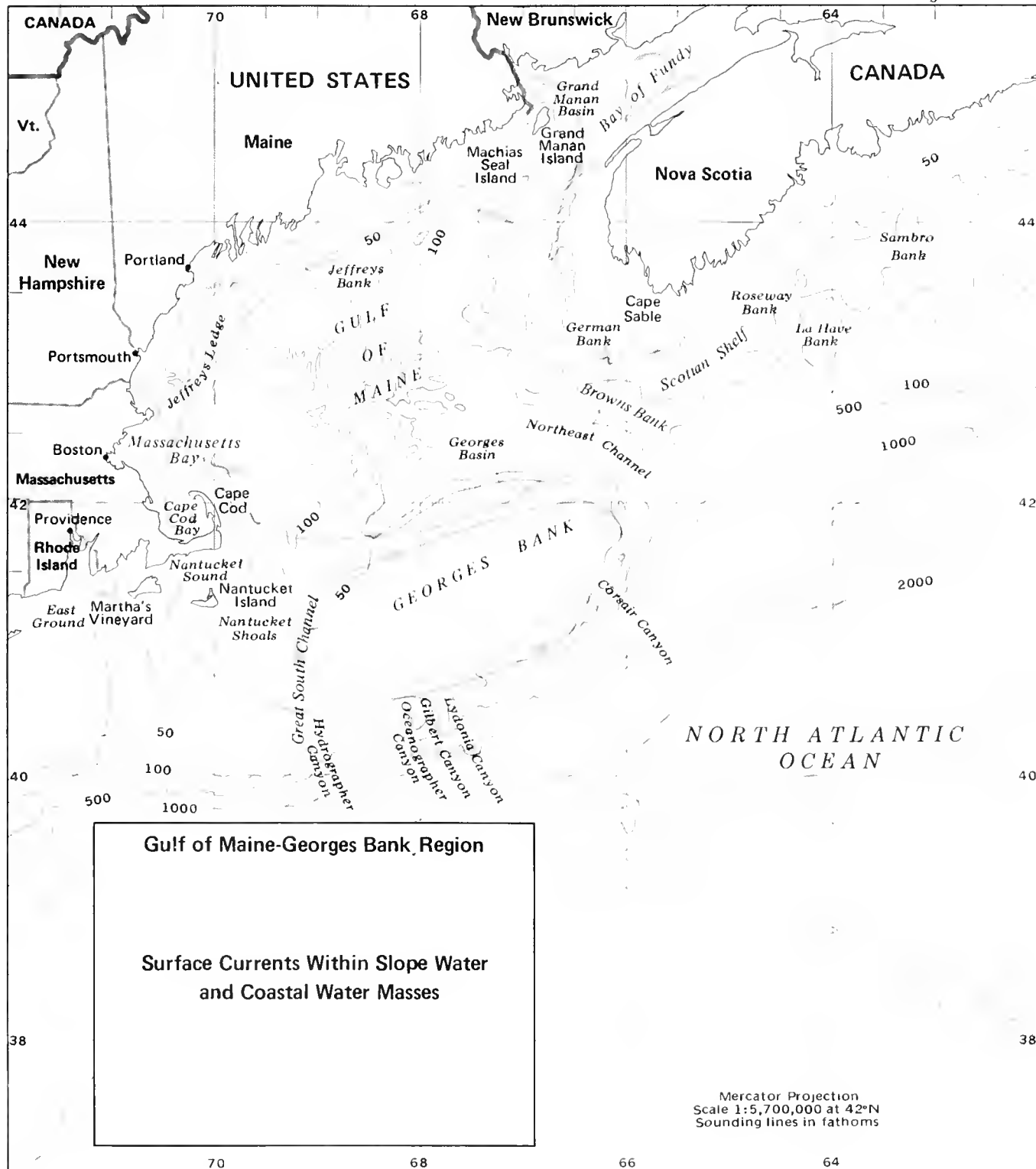
Unlike the more uniform southern portion, the shelf area north of Georges Bank is characterized by many scattered rises which comprise the various fishing banks. The estuarine influence of coastal rivers is absent, and there are none of the canyon features which are typical to the south. The northern portion is also characterized by colder waters as the influence of the Gulf Stream current diminishes and a colder current regime becomes more predominant.

The dominant current in the region is the Gulf Stream, which forms a narrow river of warm water from the Gulf of Mexico to the Northwest Atlantic (figure 4). In the spring, a large circular flow of water around Georges Bank creates the Georges Bank Eddy. The eddy dissipates in the fall, when most water moves southerly over the Bank (Res. Inst. G. Maine, 1974). A second eddy encompasses the entire Gulf of Maine.

Distributional charts of commercially important species are included in figures 5a through 5o. These charts indicate that almost every such species is present in commercial



Figure 4



quantities in both the U.S. and Canadian fishery zones. The distributions are based on Grosslein and Clark (1976), Gusey (1977), Hare (1977), 1974 R/V Albatross survey cruises, and consultations with the NMFS Wood Hole Laboratory and the Canadian Department of Fisheries and Oceans.

These charts should not be assumed to show absolute abundance or the relative abundance between the U.S. and Canadian zones. Distributions and concentrations are approximate and may vary from year to year due to oceanographic conditions. Narrative descriptions of each species distribution are present in Appendix II. A more thorough description of the affected physical and biological environment is present in Appendix III.

#### B. Areas of Special Biological Importance

Colton, et al. (1979) summarized importance spawning areas for many important fish on the Georges Bank, and in the Gulf of Maine and Mid-Atlantic areas (Table I). The most productive grounds are: Georges Bank, Nantucket Shoals, the Great South Channel, and the continental shelf from Cape Hatteras to Block Island.





Figure 5a

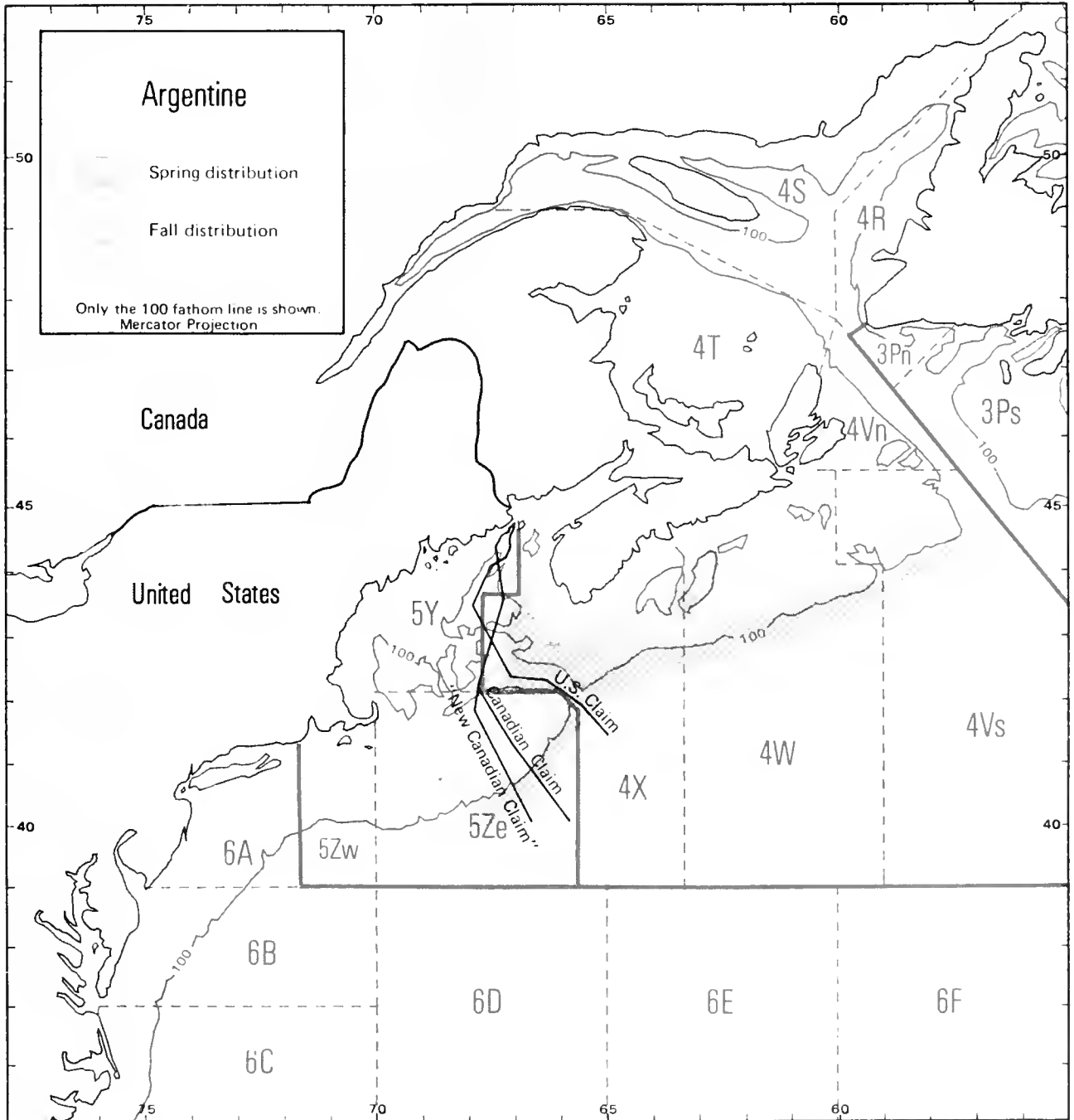


Figure 5b

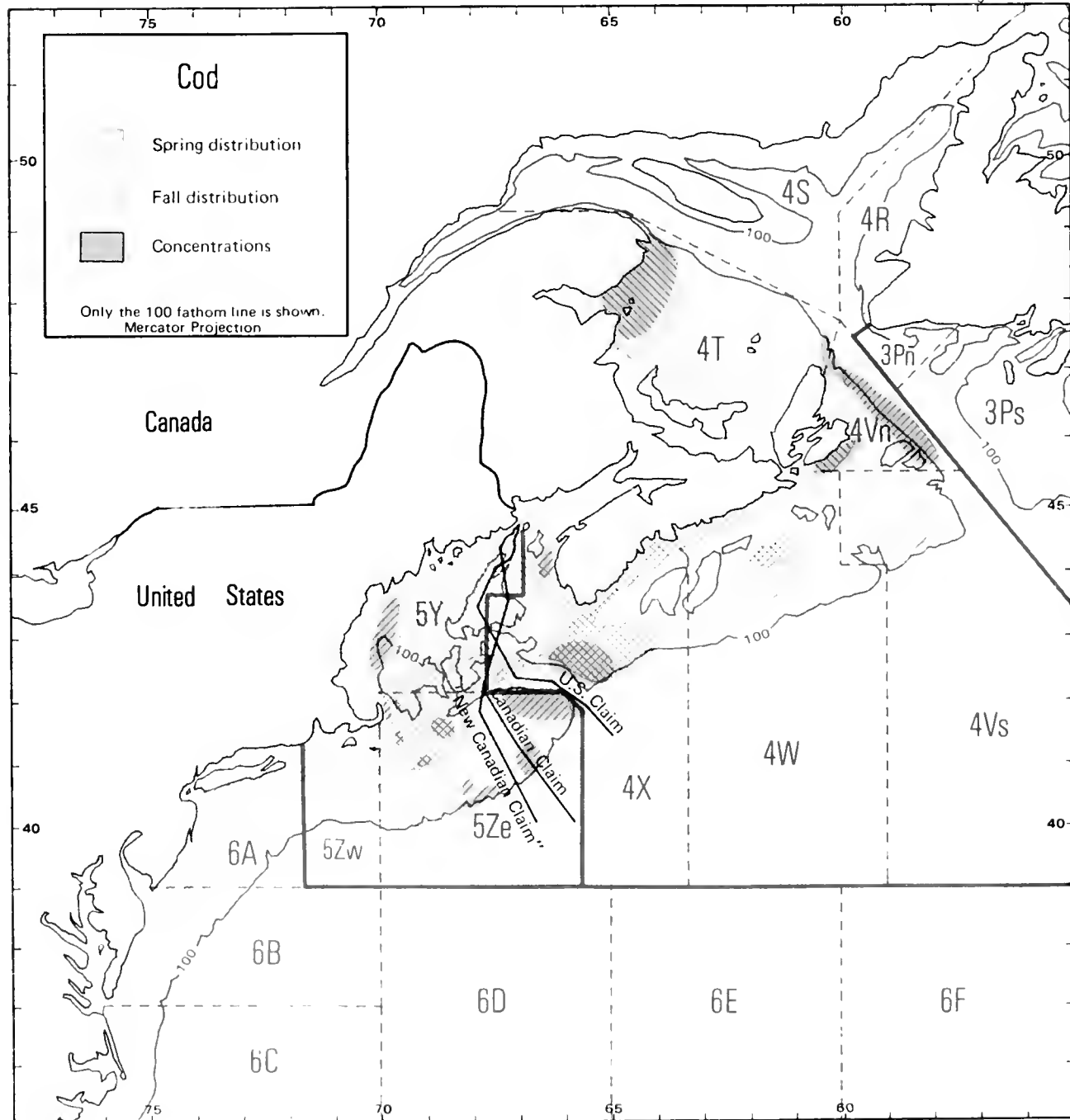


Figure 5c

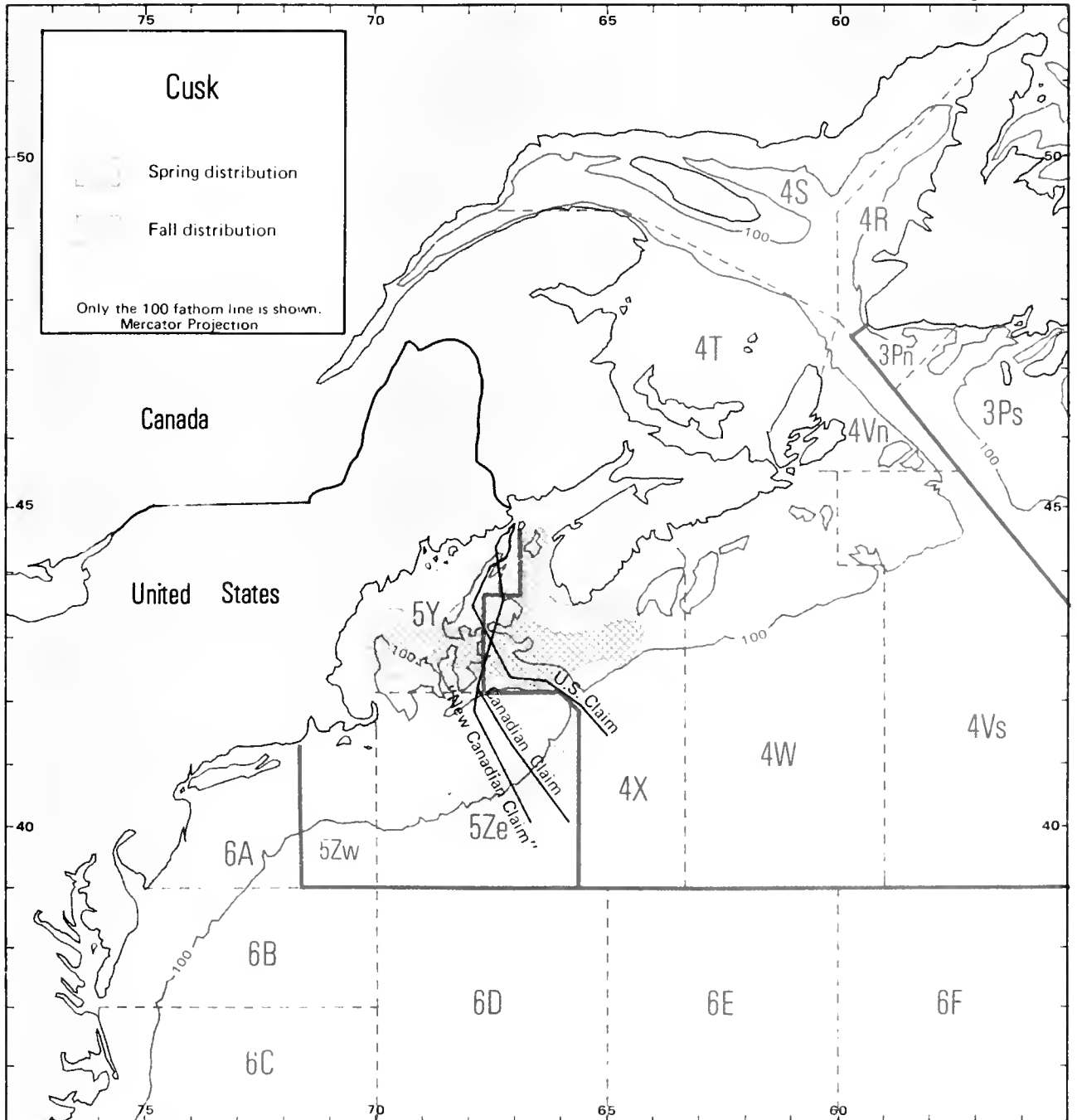


Figure 5d

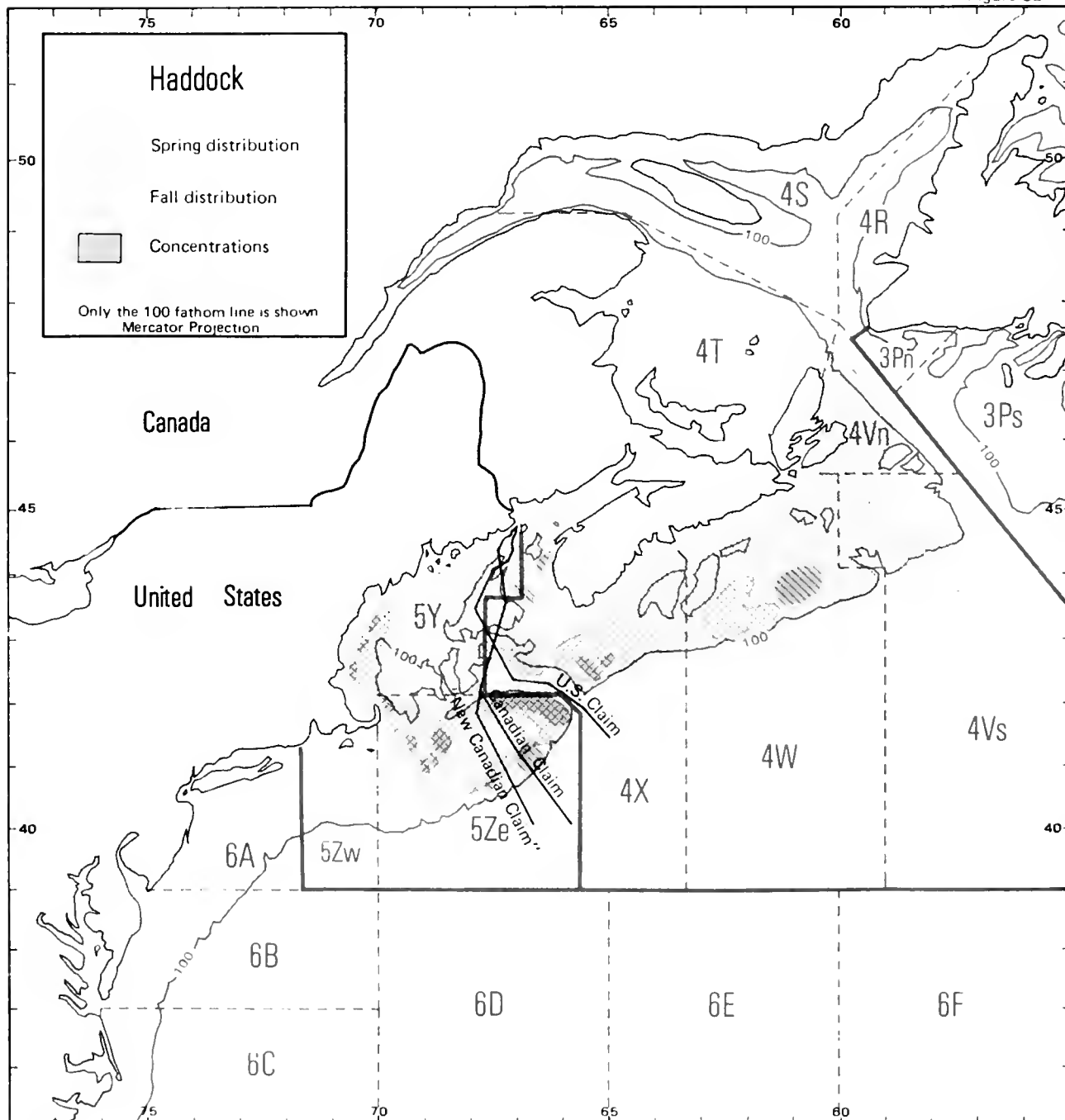




Figure 5e

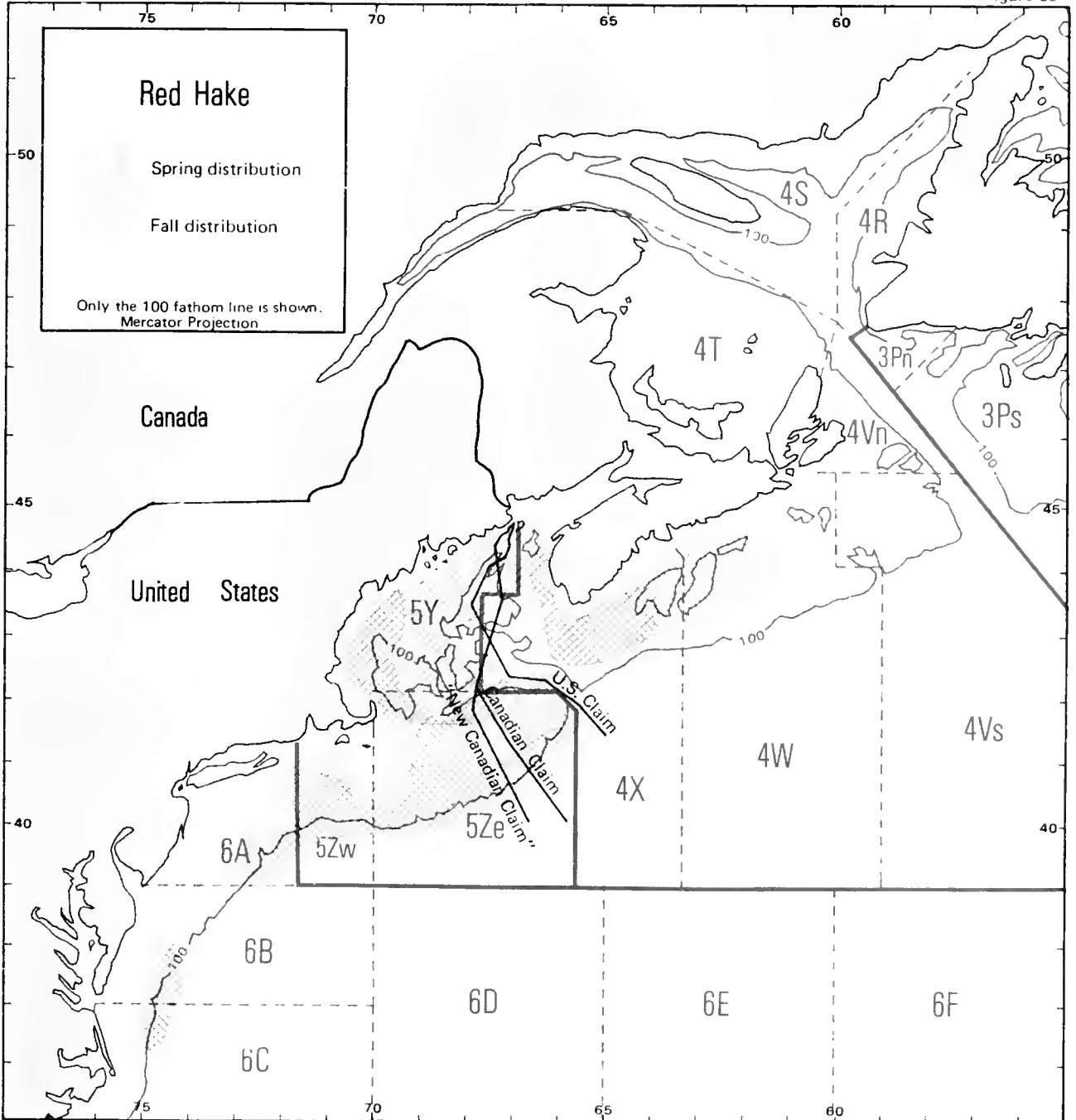




Figure 5g

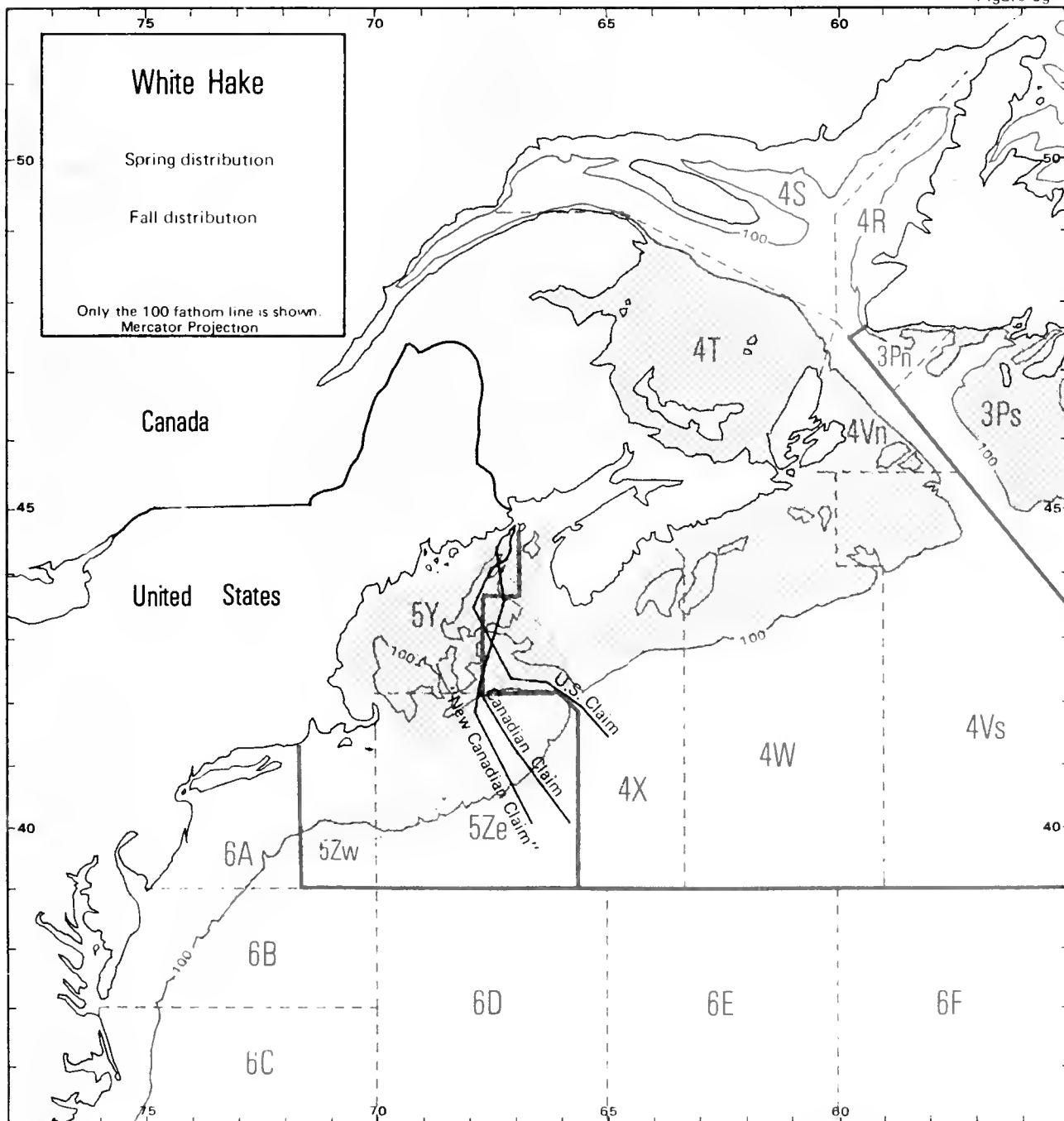


Figure 5h

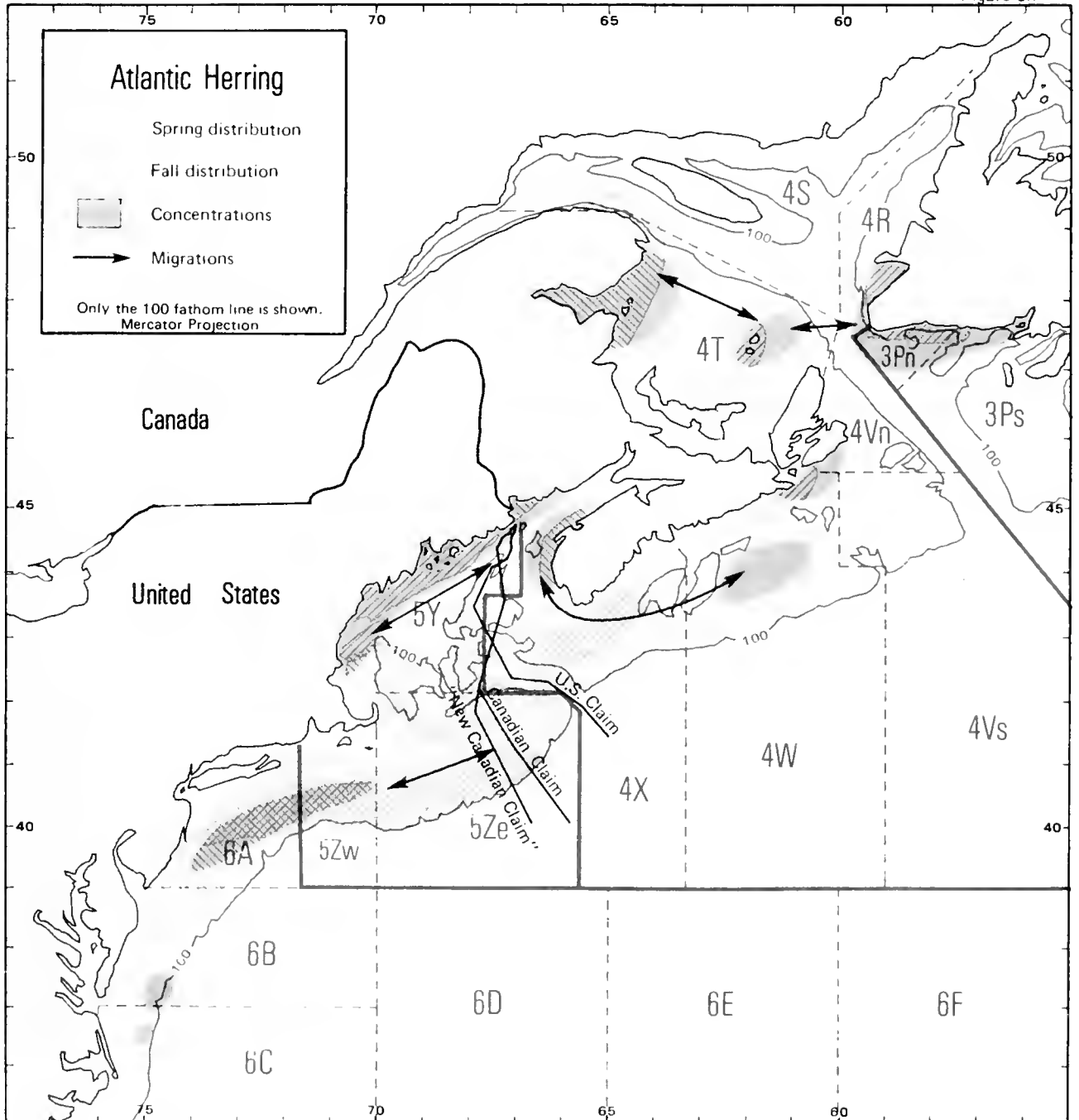


Figure 5i

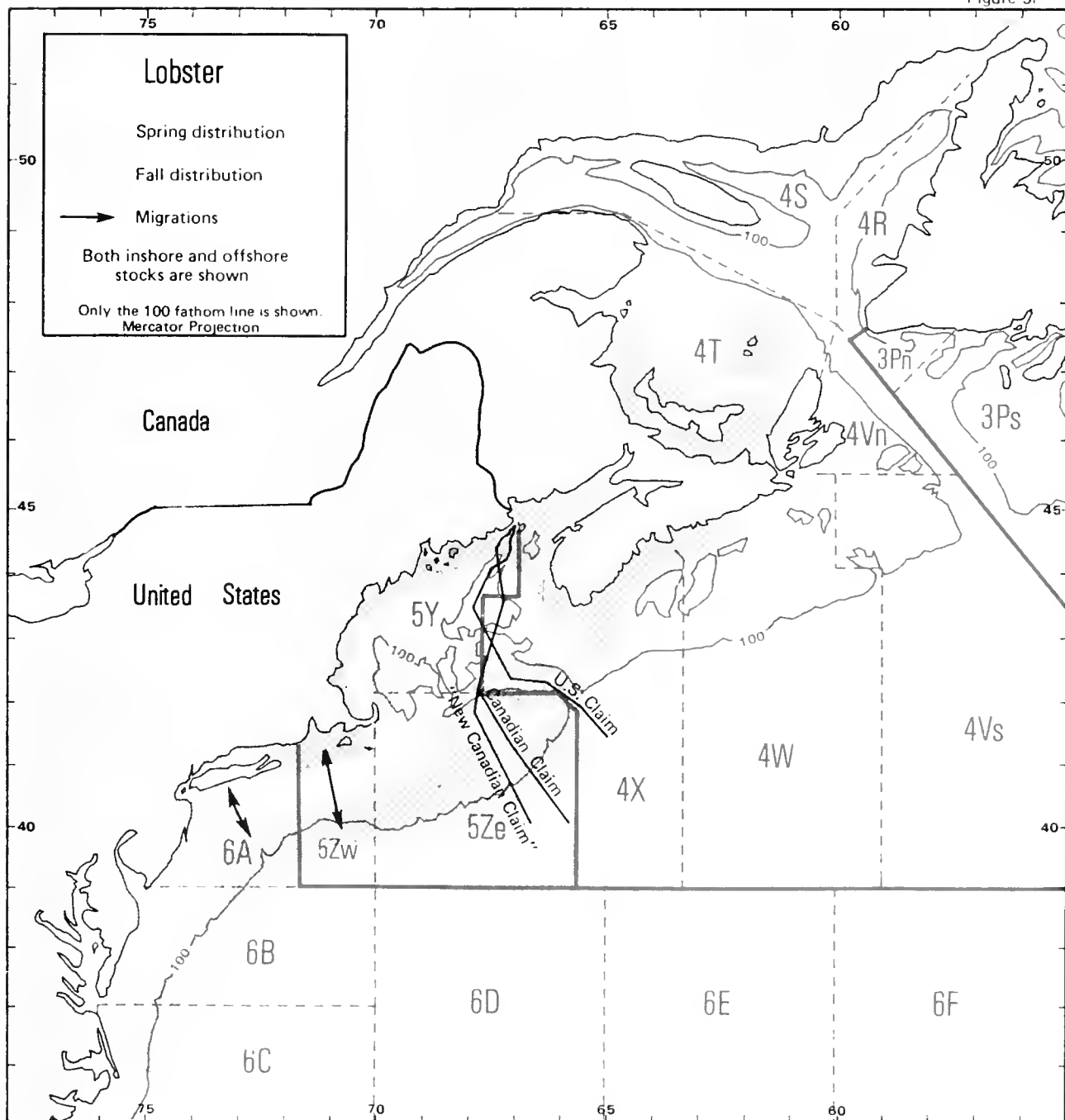


Figure 5j

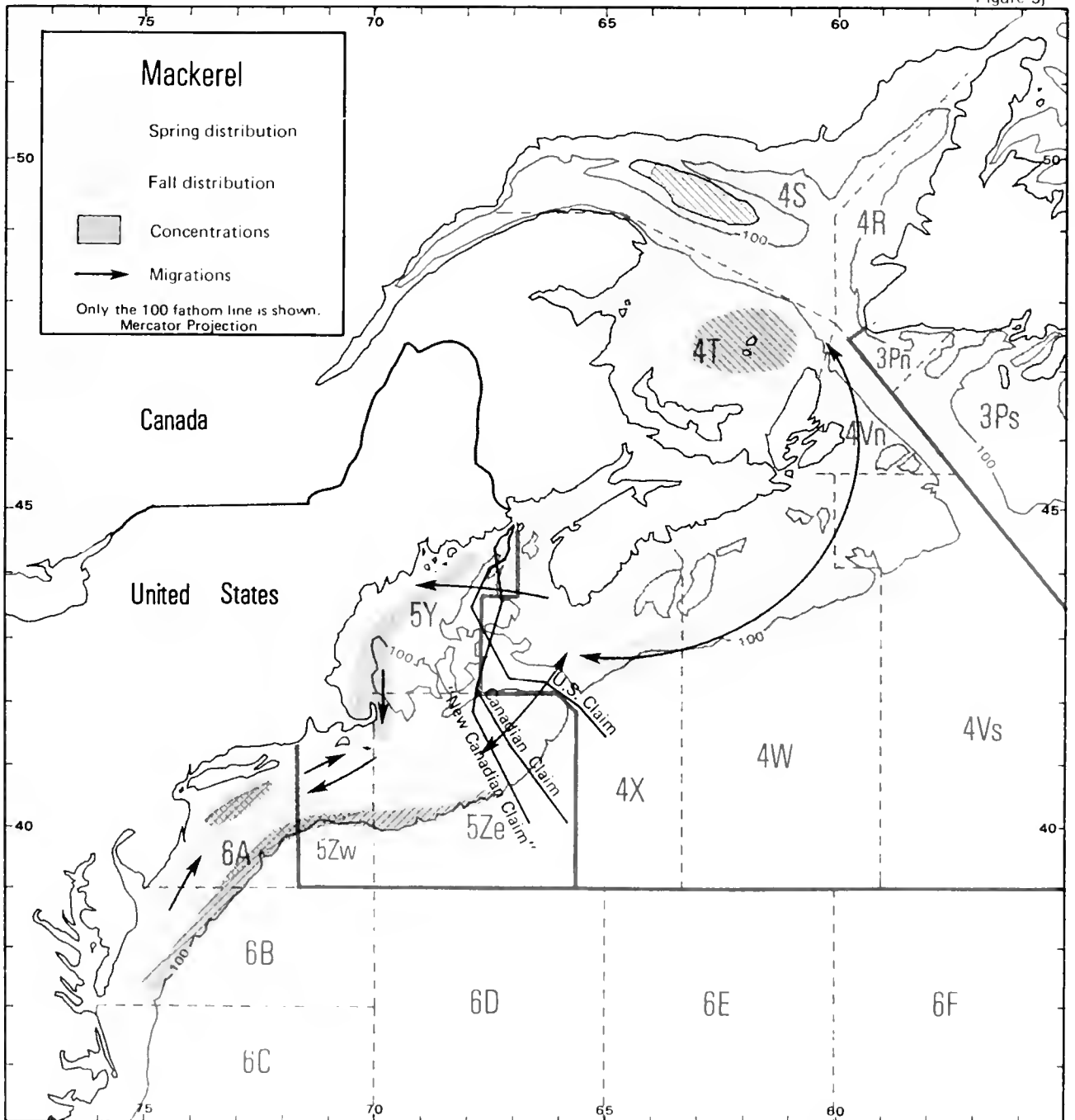


Figure 5k

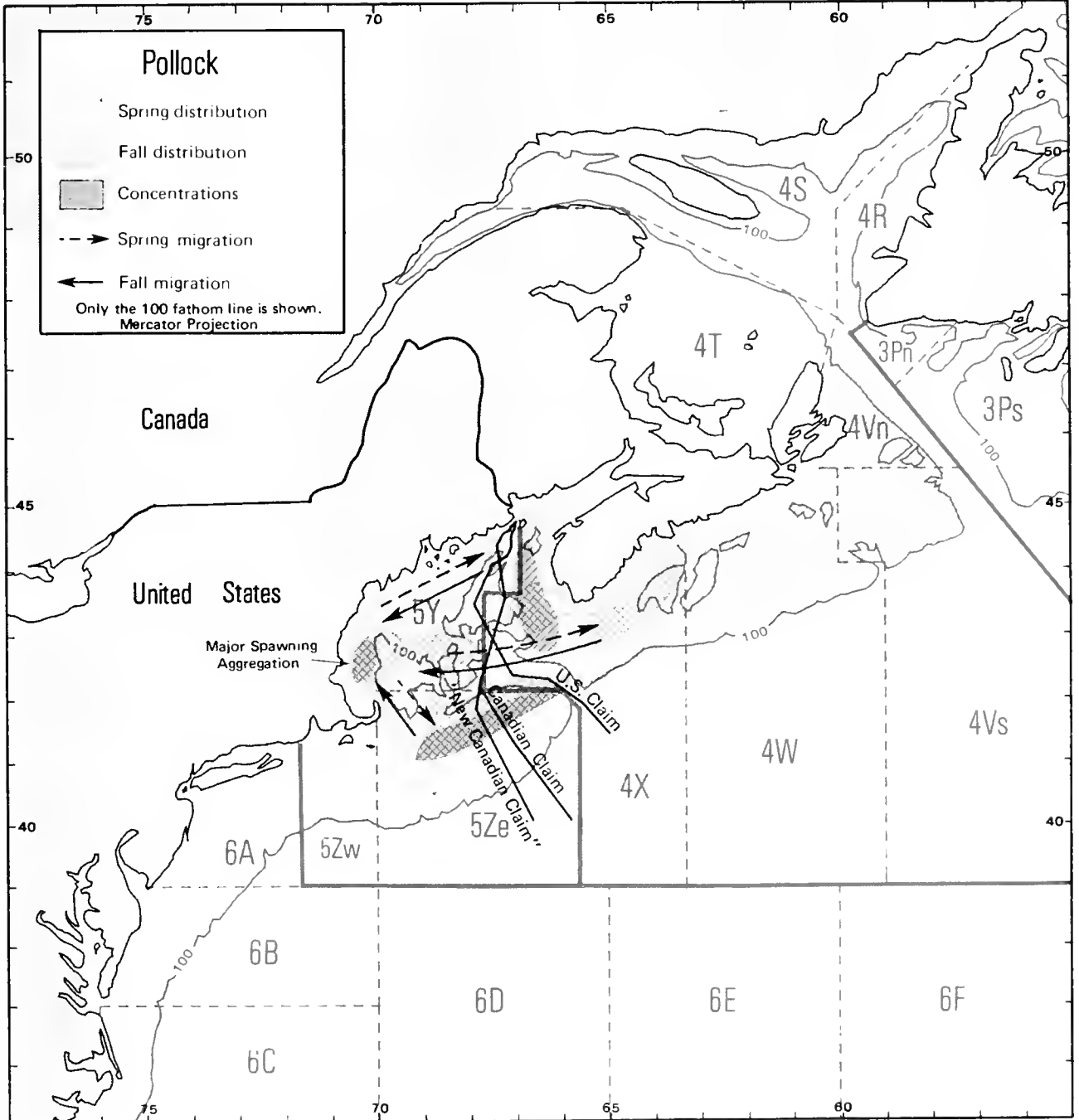


Figure 51

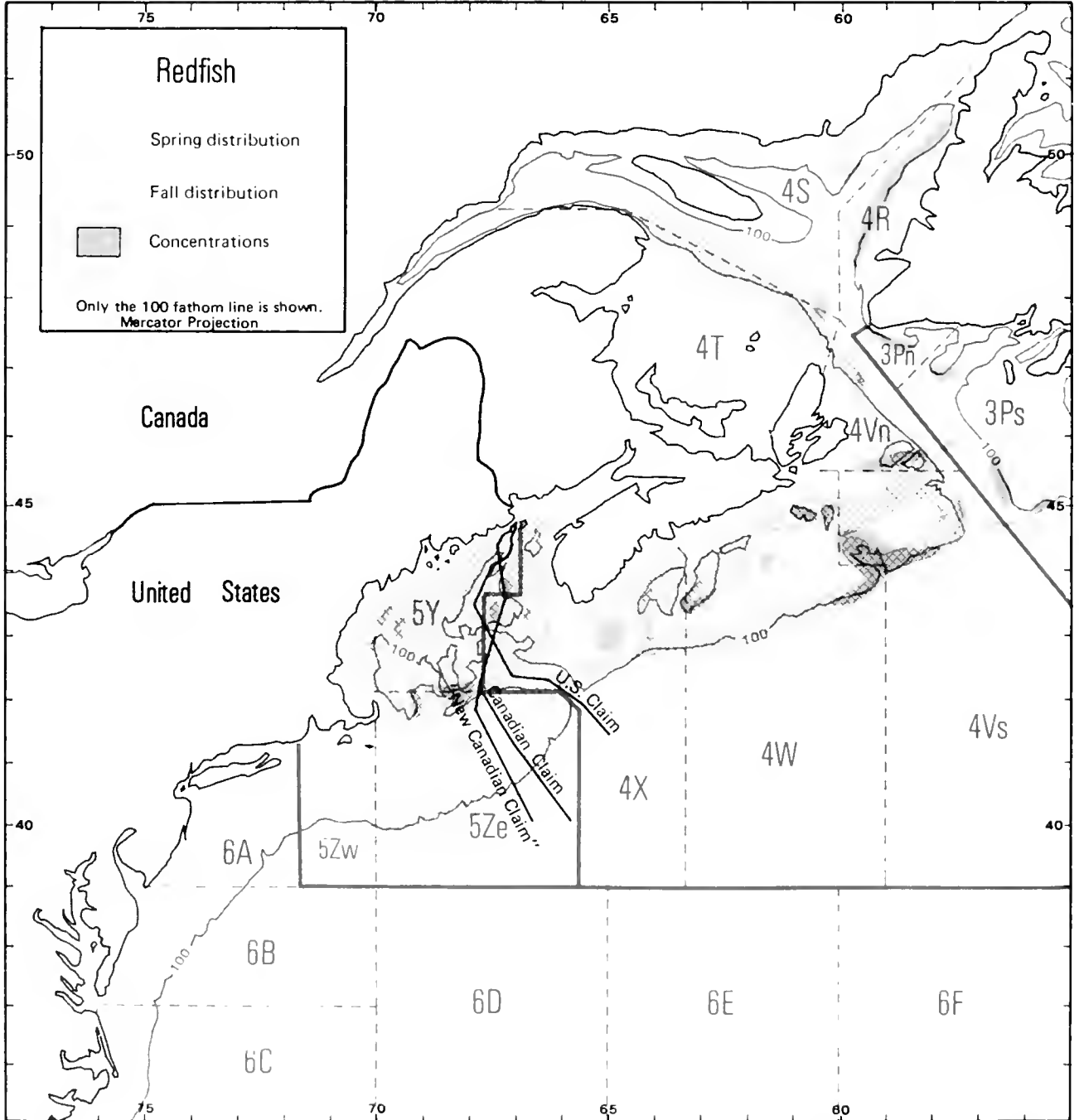




Figure 5m

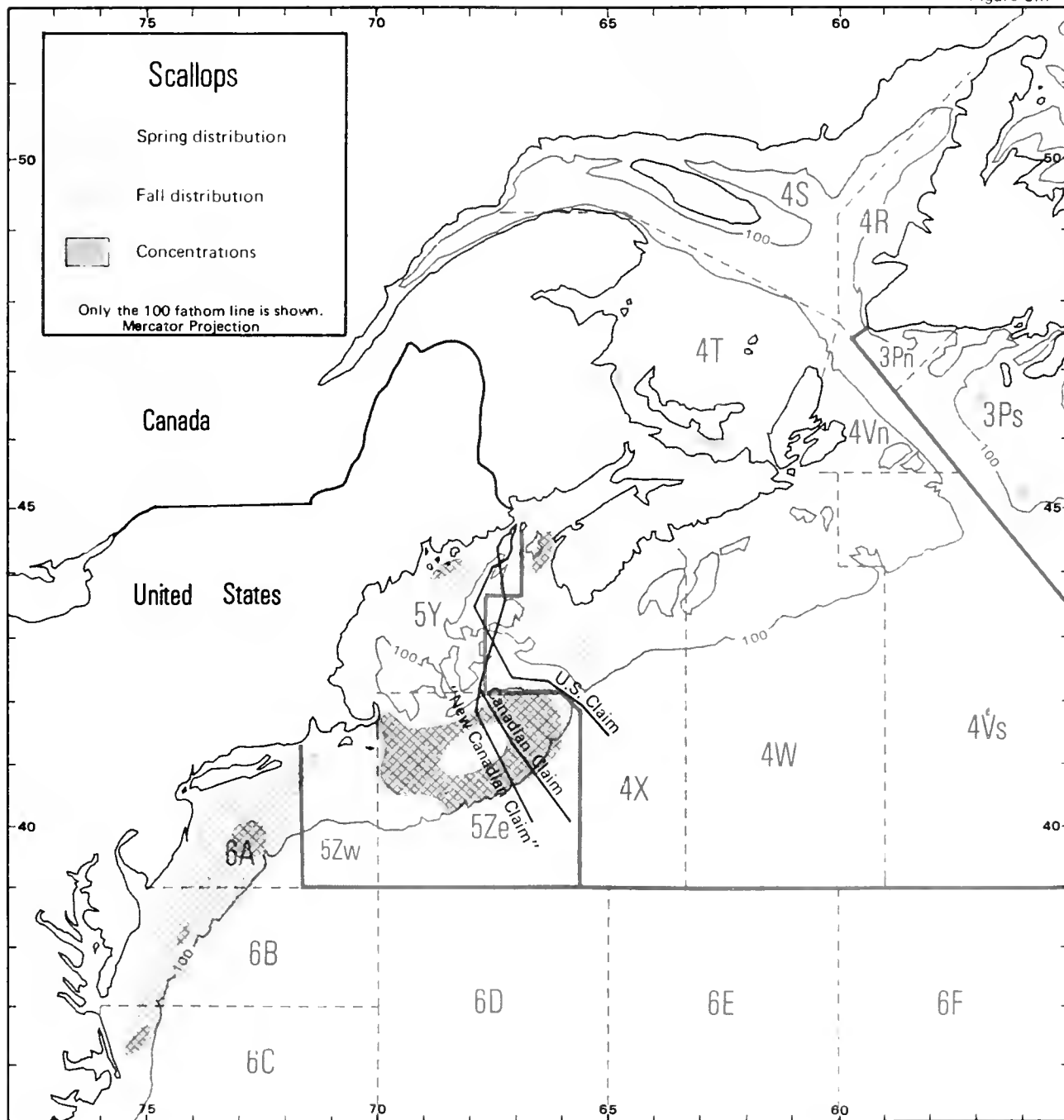


Figure 5n

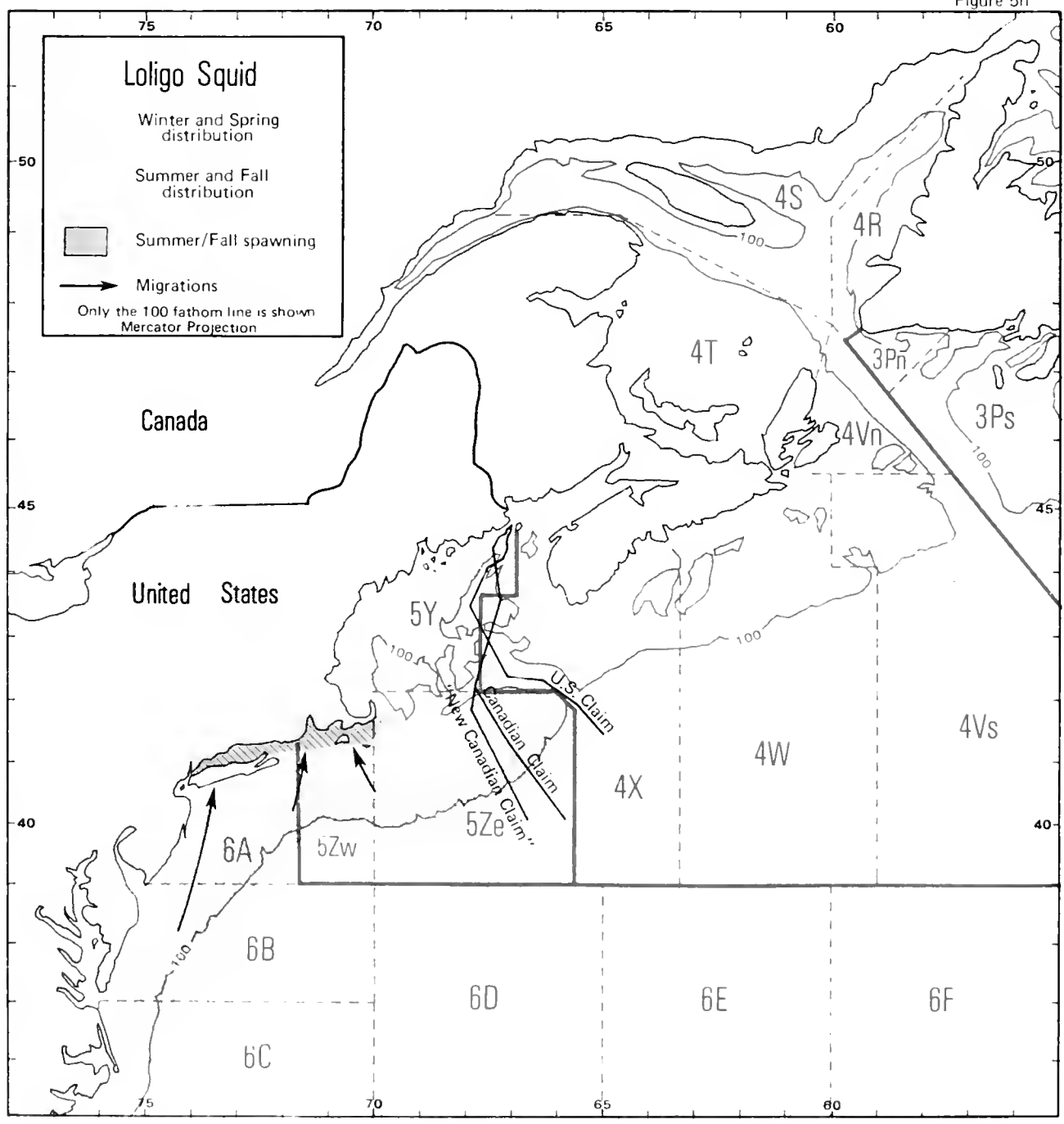
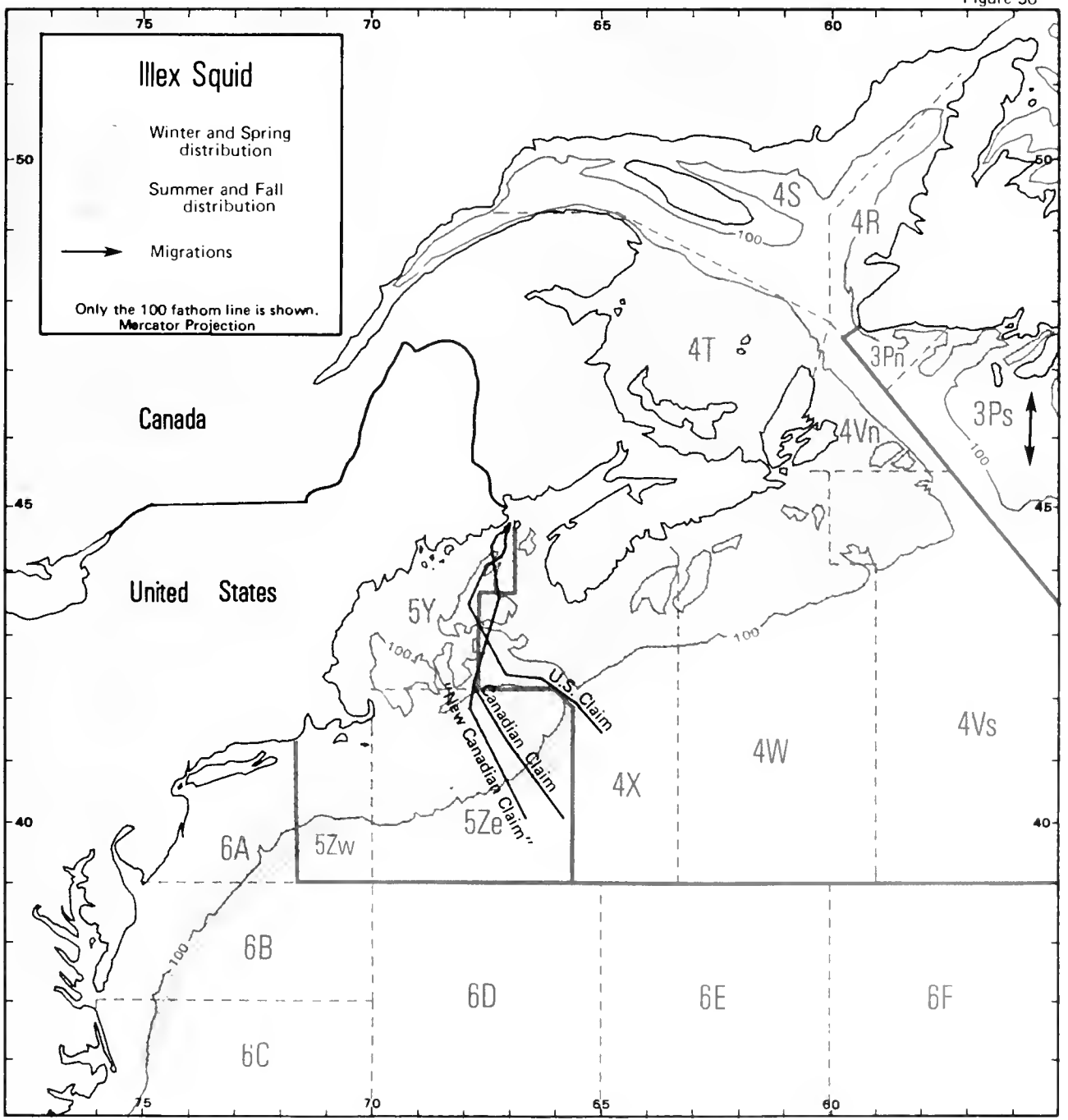


Figure 5o



### C. Human Environment

The human environment that would be directly affected by the proposed action through its ultimate impact on the availability and price of fish consists primarily of fish harvesters and processors located on the east coast of the United States from Maine to Virginia. It also consists of consumers throughout the nation. Likely impacts of the proposed action are assessed in section IV(A)(3) of this statement. In addition, individuals and organizations dependent in whole or in part on the fishing industry would be indirectly affected by the proposed action. These individuals and organizations include, among others, those involved in transporting fish and fish products, constructing fishing vessels and processing plants, supplying and outfitting fish harvesters and processors, etc. Secondary or indirect impacts that may result from the proposed action are not assessed herein because of the speculative nature of such an assessment and the lack of available data.

In response to Congressional inquiries, the Northeast Regional Office of the National Marine Fisheries Service prepared a document entitled "A Short Run Economic Impact

Analysis of the U.S.-Canadian Agreement on East Coast Fishery Resources" in June 1979. Parts I and II of that document contain detailed information describing fish harvesting and processing sectors that would be affected by the proposed action.

The document is available on request from the Director, Northeast Region, National Marine Fisheries Service, NOAA, 14 Elm Street, Gloucester, Mass. 01930.

Appendix IV of this statement profiles commercial fisheries in each state adjacent to areas of potential Canadian access and key fisheries covered by the Agreement. Recreational fisheries, which may account for a large portion of U.S. landings of certain species, are not described due to the lack of recent survey data.

#### IV. ENVIRONMENTAL CONSEQUENCES

##### A. Impact of the Proposed Action

###### 1. Physical Environment

Under the Agreement, Canadian fishing vessels would have access to limited areas of the U.S. fishery conservation zone (FCZ) to harvest the entitlements provided. With the exception of access provided in the Loligo squid fishery, Canadian vessels would be confined to former ICNAF Subarea 5, principally Subdivision 5Ze and, to a lesser extent, Division 5Y (see figure 2). They would not be permitted to fish within 12 miles of the U.S. coast. It should be noted that Canadian fishing vessels currently have access to a significant portion of Subdivision 5Ze by virtue of the overlapping boundary claims on Georges Bank.

The proposed action would generate two categories of impacts on the physical environment, one related to the presence of Canadian fishing vessels in part of the U.S. zone, and the other related to the act of fishing. The presence of Canadian vessels within the FCZ carries with it the potential for certain hazards such as collisions with other vessels and marine pollution. These potential

hazards exist whenever vessels of any nationality transit or fish in the U.S. FCZ. Compliance with the International Regulations for preventing Collisions at Sea (1972), which have been incorporated into the domestic law of both countries, should minimize the potential for collision.

The problem of marine pollution by fishing vessels in the FCZ is not addressed in U.S. law. Nevertheless, pollution from these sources is considerably less threatening to the physical environment than marine pollution caused by larger vessels, particularly oil tankers.

Potential impacts on the physical environment associated with the act of trawling or dredging by Canadian vessels under the Agreement include: gear conflicts with other fishermen, damage to marine structures such as under-sea communication cables, and disruption of sediments and bottom dwelling marine life. These potential impacts may also result from the activities of other foreign fishing vessels that presently fish in the FCZ under Governing International Fishery Agreements, as well as from the activities of our expanding domestic fleet.

Although access granted to Canadian vessels would be confined as noted, it would be on terms more liberal than those applicable to other foreign vessels fishing in the

FCZ. The activities of those other vessels are governed by the U.S. foreign fishing regulations; the activities of Canadian vessels would be governed by the Agreement provisions and by regulations applicable to U.S. vessels except in the Loligo squid fishery. In that fishery, Canadian vessels would have access for 10 years on terms more restrictive than those governing U.S. vessels, but somewhat less restrictive than those governing other foreign vessels. Most likely, Canadian vessels in the Loligo squid fishery would be confined to the approximate areas of the present foreign fishing areas off the Mid-Atlantic states.

Thus, although gear conflicts and damage to marine structures may be no greater as the result of Canadian access than as the result of access granted an equivalent number of other foreign vessels, it is possible such problems may arise over a broader area of the FCZ. To mitigate gear conflict problems, the Agreement calls for the establishment of gear avoidance regulations that would apply equally to U.S. and Canadian fishermen. In addition, potential damage to marine structures can be minimized by adequate notice of their location and through regulations concerning authorized fishing.

Disruption to continental shelf sediments and bottom dwelling marine life from the use of bottom trawls and



drifts in certain fisheries can be minimized, if necessary, by gear regulations. The specific environmental effects of the use of such gear are more appropriately the focus of the specific management plans for the various fisheries under the Agreement.

The potential impacts of all of the above can be discounted to some extent by the number of U.S. vessels that would leave the U.S. zone to fish once again in areas under undisputed Canadian fisheries jurisdiction. In 1977, more than 100 U.S. fishing vessels reported operating during some part of the year in the Canadian zone. Since June 1978, these vessels have been confined to the U.S. zone, increasing the potential for impacts on the physical environment of the U.S. zone such as those described. Under the Agreement, it is anticipated that some, if not all, of these vessels again would operate in the Canadian zone.

## 2. Biological Environment

The proposed action would create a framework within which the United States and Canada would be able to coordinate fishery management decisions for stocks of mutual

interest. The Agreement itself makes few management decisions regarding these resources. It requires that total allowable catches be established annually based on the best scientific information available. It vests one country, the other, or both with exclusive or primary management responsibility for each stock covered. And it contains percentage shares to be applied to the annual TAC's to determine the amount each country may fish.

Beyond these basic provisions, the Agreement leaves the development of specific management programs to the country with exclusive or primary management responsibility, or to both countries in the case of four stocks. These programs would be developed in accordance with the Agreement's management principles which are patterned after the national standards for fishery management contained in the Fishery Conservation and Management Act of 1976. In the case of stocks managed primarily by one country and those managed jointly, the Agreement provides for dispute resolution to guard against the possibility that deadlock may leave the stocks unprotected.

The impact of this management framework on the biological environment would be beneficial. Currently, the United States and Canada undertake independently to manage many stocks fished by both. For some, one country has

implemented a management program while the other has not. For others, neither country has yet developed management programs. Because neither country is bound by the regulations of the other, neither is able to establish TAC's for the stocks. Instead, each now establishes TAC's only for its own fishermen. Even where both countries seem to agree on annual TAC's, they often disagree on the amount each is entitled to take. The result in several instances has been actual catches that exceed the totals both believe are sound.

The Agreement would substitute a single TAC for TAC's adopted independently, and would require an annual TAC for each stock covered. The entitlement percentage shares would resolve differences over what each country may take. Thus, risks of overfishing would be diminished, and stock rebuilding efforts would have a reasonable opportunity to achieve the desired ends. Most importantly, the Agreement would assure that pressure to maximize short term uses of these resources will not be allowed to threaten long term productivity.

Fishery resources can be managed with various goals in mind. For instance, the Mid-Atlantic Fishery Management Council is attempting to create significant future opportunities for recreational fishermen in the Atlantic

mackerel fishery. The optimum yield established in the Council's Atlantic mackerel plan reflects this decision by restricting current uses. On the other hand, the New England Council is attempting to rebuild cod and haddock stocks depleted in the past by overfishing, while minimizing current economic dislocation among those dependent on these fisheries. As a result, the OY's established seek to balance these goals.

A problem which both Councils now face, however, is that Canadian fishermen who fish the same stocks are under no obligation to observe the management measures adopted. The Councils' goals thus may or may not be realized. The Agreement would require that fishermen of both countries observe the management measures adopted for each stock.

Under the Agreement the United States would have exclusive or primary management responsibility for all Georges Bank stocks except argentine, scallops (precise the Great South Channel), and cusk. Atlantic mackerel (TAC only), lobster (only in the boundary region, and only pending delimitation of the boundary), pollock and Georges Bank cusk would be managed jointly. The Agreement thus would not only provide for coordinated management, but would give the United States the exclusive or predominant say in how the majority of stocks in the U.S. zone are

managed. Such a management role would be significantly greater than that the United States now enjoys since, at the present, its management decisions for the majority of these stocks can be ignored by Canadian fishermen.

Specific management programs developed for stocks in the Agreement will impact the biological environment most directly. As mentioned, however, these programs would be adopted in accordance with the Agreement's management principles only after it has entered into force. The Agreement's principal impact would be its assurance that TAC's will be established, that both countries will be entitled to a certain percentage share, and that disagreements over management measures will not leave the stocks unprotected.

The United States and Canada have both experienced the "tragedy of the commons" when important stocks of fish were available to all and pressure to maximize current uses was intense. In the 1960's and 1970's, attempts at fisheries management were made by the International Commission for the Northwest Atlantic Fisheries (ICNAF) and through various bilateral agreements. Despite these efforts, stocks in the Georges Bank-Gulf of Maine area declined. Countries participating in the fisheries were unwilling to accept adequate restraint in the short term to assure long

term productivity. TAC's were set too high for certain species and not set at all for others. In addition, TAC's set for individual species did not always take sufficient account of the bycatch of those species taken incidentally in directed fisheries for other species.

Experience under ICNAF reflects the harmful impacts that can flow from (1) intense competition among countries for shares of limited resources, (2) too much emphasis on current uses of fishery resources at the expense of future uses, and (3) inadequate or incomplete management systems. After extending their jurisdiction over fisheries to prevent further depletion of these resources, the United States and Canada now must agree on how shared resources are to be conserved and managed lest they repeat the "tragedy of the commons". The proposed action would provide principles and procedures for doing so.

Because fisheries management is a dynamic process, it must have the flexibility to respond to changes in the biological status of the stocks and to profit from increased scientific knowledge. The Agreement provides in Article VII for amending annual management measures for Category A stocks (those jointly managed) and Category B stocks (those where one country or the other has primary management responsibility). Such amendments could be

implemented rapidly if, in light of unforeseen circumstances, a stock is threatened with serious and immediate harm, or if there is an economic emergency in a fishery that can be alleviated without significant adverse effects on the conservation of the stock. Management measures for Category C stocks (those managed exclusively by one country or the other) could be amended at any time by the country with exclusive management authority.

The Agreement's management principles require that annual management measures be based on the best scientific information available. This requirement will assure that the countries profit from increased scientific knowledge of the fisheries. In addition, these principles require that management measures take into account demonstrated degrees of stock and species interrelationships. This requirement would assure that the countries consider management measures not only in terms of their effect on a given stock, but on the relationship between that stock and the ecosystem of which it forms a part. Should our expanding knowledge of such relationships increase to a point enabling the countries to implement entirely new management strategies, they would be able to do so by agreement at any time.

The Agreement recognizes the need for flexibility to encourage innovative management techniques. For instance, management measures listed in Article XI, paragraph 2, that may be adopted for Category A and B stocks are permissive rather than obligatory. Article VIII specifically provides that the Parties may amend any provision of the Annexes by agreement. It also allows the Commission to recommend such amendments to the Parties, including without limitation, the addition or deletion of stocks, the transfer of stocks from one Annex to another, and changes in fishing entitlements and access areas. If the time limits or other administrative procedures set forth in the Agreement prove unsatisfactory, either Party may request a review and renegotiation of such provisions after an initial 5-year period following entry into force of the Agreement.

The management categories established in the Agreement would provide for graduated degrees of interaction between the countries in managing fishery resources. Stocks appear in one category or another based on a number of factors. These include the degree to which a given stock, based on seasonal migration patterns, is found in the fishery conservation zone of one country or the other, how much interaction there appears to be between stocks,



where spawning grounds are located, and the degree to which fishermen of one country or the other have fished traditionally for a given stock. No set formula can be applied.

Where possible, to facilitate management and to avoid the potential for disagreement as to conservation goals, stocks would be managed exclusively or primarily by one country or the other. Thus, for example, Atlantic cod in Division 5Y as well as Atlantic cod in Division 4W and Subdivision 4Vs are listed in Category C. Cod in these areas are basically localized. They can thus be managed as a unit in each of the two areas (Division 5Y and area 4VSW) independently. Although fishermen of the two countries have operated for cod in both areas, the Parties agreed in the context of the negotiations to limit their entitlement shares in each other's zone to very low percentages (less than two percent in each case). Thus, because cod stocks in these areas do not range significantly beyond them, because fishery management jurisdiction is not disputed, and because fishermen of each country would have limited interests in the zone of the other, management of these stocks need not involve a significant degree of coordination between the Parties.

On the other hand, cod in Division 57, though relatively localized, is accessible to fishermen of both countries in the boundary region on Georges Bank. This factor, coupled with the interest of both countries in the 57 cod stock as demonstrated by their past catches and as reflected in their entitlement shares, can be seen to require some management coordination between them. Under the Agreement, the 57 cod stock is listed under Category I. The United States would have primary management responsibility for this stock. The United States would thus develop management measures for the 57 cod stock in accordance with the Agreement's management principles. Canada would be able to object to the management measures adopted by the United States, but would be required to demonstrate that those measures are clearly inconsistent with the Agreement's management principles for them to be modified.

Category A procedures would involve the greatest degree of management cooperation between the two countries. These procedures would apply in whole or in part to those stocks in which both countries have significant interests. For instance, although most Atlantic mackerel winter off the U.S. coast in Areas 5 and 6, a large number migrate to the Canadian zone in summer to spawn. The fishing pressure

applied by either country to this species within its exclusive fishery zone may affect it throughout its migratory range. Proper management of Atlantic mackerel in Areas 3, 4, 5, and 6 can thus be seen to require a joint effort of the Parties. Under the Agreement, fishermen of each country would be authorized to harvest mackerel only in that country's zone, but both countries would agree in the Commission on the annual TAC for all four areas.

Another example is that of cusk in Subdivision 5Ze. Unlike mackerel, this stock is not thought to range significantly between the undisputed fishery zones of the two countries. This factor alone might be thought to suggest that cusk in 5Ze should be managed according to Category E procedures. But cusk in this area is currently available to fishermen of both countries in the boundary region and Canada's annual harvests of cusk in Subdivision 5Ze have been substantially greater over time than those of the United States. This is reflected in the countries' entitlement shares (Canada 66 percent; United States 34 percent). In balancing their interests in this stock, the Parties agreed that Category A procedures should govern the management of cusk in 5Ze.

Regardless of the specific category in which a stock appears, the Agreement, as mentioned, recognizes that

experience may demonstrate another category would be more appropriate to effective management of that stock. The countries would be able to vary them at any time by agreement, and the Commission would also be able to recommend amendments.

The proposed action represents some departure from traditional bilateral fishery agreements with their limited management goals and limited contributions to conservation. It would establish a comprehensive system for conserving a broad range of fishery resources. It would have the flexibility necessary to evolve with increased scientific knowledge and developing theories of management. Above all, it would encourage long term resource productivity.

### 3. The Human Environment

#### a. Introduction

In enacting the Fishery Conservation and Management Act of 1976 Congress created a national program of conservation and management intended to realize the full potential of the Nation's fishery resources. Eight Regional Fishery Management Councils were created to develop and implement management plans for regional fisheries within the U.S. fishery conservation zone. The New England and Mid-Atlantic Councils, however, are placed in the difficult position of imposing restraints on U.S. fishermen in the interest of sound management, while having no control over Canadian fishermen fishing the same stocks. The Agreement seeks to resolve this problem by providing for coordinated management of the stocks in which both countries have an economic interest, consistent with the management principles of the FCMA, and with the full participation of the Regional Councils.

With or without an agreement, efforts to manage or rebuild fully or over-exploited stocks would involve some degree of socio-economic dislocation. Effective stock management may require temporarily lower catch levels for some stocks than those of recent years, while others may be increased. One or both countries may thus experience

temporary socio-economic dislocations. Without an Agreement each country would be expected to act to minimize its own losses, and the result could be a combined rate of harvest higher than that which either side would individually recommend. Socio-economic dislocation in the present may thus be minimized, but only at the expense of future opportunities. If both countries instead mutually agree to a rate of total harvest, both short-term impacts and long-term economic benefits will be shared. As described in detail in the following sections, the full potential of the fishery resource is much more likely to be realized, and overall socio-economic benefit to both Nations is expected to be greater in the long-term with the Agreement than without it.

The proposed action would have both short-term and long-term impacts on the human environment, some of which can be quantified reliably while others cannot. For example, in 1977, the last full year of reciprocal fishing, more than 100 U.S. vessels reported operating all or part of the year in the Canadian zone. Since June 1978 Canada has excluded them. The proposed action would enable U.S. vessels to resume operations in the Canadian zone to continue traditional fisheries. In 1980 the value of this access to U.S. harvesters is estimated at \$5.1 million,

TABLE II - Provisional Estimate of Potential Long-Term Sustainable Average Annual Catch Levels from Selected Stocks (Assuming Rebuilding and Conservation of Stocks)

Species	Stock Area (See figure)	Potential Catch (1,000 MT)	Qualifications - Source
Herring*	4WX	90-104	CAFSAC <sup>2</sup> Pelagic Subcommittee Report (78/5) 1979-1986 estimated range
	5Y	16	Assuming constant recruitment at $F_{0.1}$ <sup>3</sup>
	5Z+6	120	Assuming constant recruitment at $F_{0.1}$ , and rebuilding of stocks
	*interactions of the herring stocks may mean that the total MSY may be less than the sum of the parts <sup>4/</sup>		
Scallops	5Ze	10	Assuming constant recruitment at $F_{0.1}$
Cod	4VSW	7	Constant catch projection to 1986; CAFSAC Groundfish Subcommittee Report, (78/6)
	4X (offshore)	4	Constant catch projection to 1986; CAFSAC Groundfish Subcommittee Report (78/6)
	5Y	8	Assuming constant recruitment at $F_{0.1}$
	5Z	35	Assuming constant recruitment at $F_{0.1}$
Haddock	4VW	28	Present TAC <sup>5/</sup> is 2,000; but if the stock is rebuilt 28,000 MT may be sustained
	4X	26	Canadian estimate, 1979 TAC
	5	50	Present TAC is about 30,000 MT; but if stock rebuilds to past recruitment levels 50,000 MT may be achieved
Mackerel	3+4	)	MSY, assuming a constant age class strength at $F_{0.1}$
	5+6	) 210	)
Pollock	4VWX+5	42	1978 Canadian assessment
Redfish	4VWX	20	CAFSAC Doc. No. 78/23 (present recommended TAC)
	4RST	16	CAFSAC Doc. No. 78/23 (projection to 1986 = 9,300 with constant recruitment at $F_{0.1}$ )

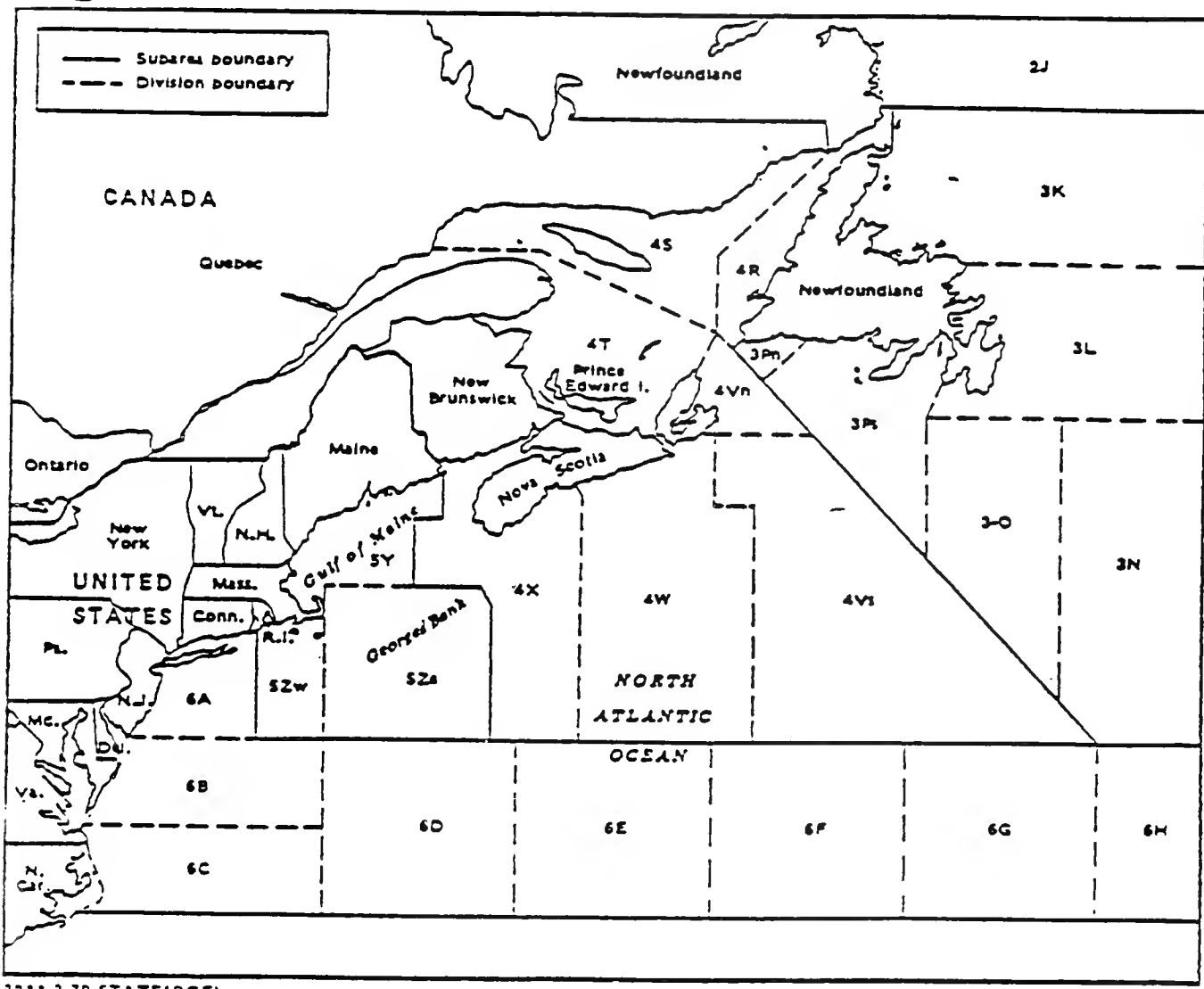
TABLE II (cont'd)

Species	Stock Area (See Figure)	Potential Catch (1,000 MT)	Qualifications - Source
Redfish	30	20	CAFSAC Doc. No. 78/6
	5	15	Based on Schaeffer yield model
Silver hake	5Ze	55	MSY, assuming constant recruitment at $F_{0.1}$
Red hake	5Ze	15	MSY, assuming constant recruitment at $F_{0.1}$
Yellowtail	5+6	30	MSY, assuming constant recruitment at $F_{0.1}$ when stock rebuilds, presently about 10,000 MT
Cusk	5Ze	1	Assessment not available, - based on average catch 65-77
White hake	4VWX	8	Assessment not available, - based on average catch 65-77
	5	3	Assessment not available, - based on average catch 65-77
Argentine	4VWX+5	17	Assessment not available, - based on average catch 65-77 (however, 1977 total catch was only 2,500 MT)
Other Groundfish	3+4	200	Assessment not available, - based on average catch 65-77 (1977 total catch was ~ 160,000 MT)
	5+6	70	Assessment not available - based on average catch 65-77 (1977-78 total catch was ~ 55,000 MT)
Squid			
<u>Illex</u>	3+4	120	Recent catches to >100,000 MT; 1979 TAC 120,000 MT may be too high; inadequate data for accurate estimate, also unknown relationship to 5+6 stock
	5+6	30	Present TAC - 30,000; but based on recent annual average catches (21,000) this may be too high
<u>Loligo</u>	5Z+6	44	Present TAC - 44,000 MT; however, TAC has not been restrictive (1970-78 average has been only 27,000 MT), so lower level may be more accurate
Offshore lobster	5Ze	2	Based on MSY estimate of 3,800 MT for SA 5Z+6, approximately half on Georges Bank, half in So. New England



TABLE II - (cont'd)

- 1/ Subject to change as new information becomes available.
- 2/ CAFSAC=Canadian Atlantic Fisheries Scientific Assessment Committee.
- 3/ Constant recruitment is defined as a constant, average number of new recruits to the fish stock becoming available to the fishery each year. Even though the actual number may vary from year to year around this value, the long-term average would be maintained.  $F_{0.1}$  is that level of fishing at which the estimated increase in total catch that would be produced by adding an additional unit of fishing effort is 10 percent of the increase produced by adding the same unit of fishing effort to the fishery during its initial phases of exploitation. (Fishing at  $F_{0.1}$  may not produce the maximum possible yield in any particular year, but it reduces the risk of overfishing and stock depletion due to unexpected declines in recruitment of young fish to a stock or other unforeseen developments.)
- 4/ MSY=Maximum sustainable yield.
- 5/ TAC=Total allowable catch.



based on projected short term total allowable catches (TAC's) and 1978 U.S. average ex-vessel prices.

Although Canadian vessels would also regain access to the U.S. zone, the value of that access is more difficult to assess since, with the exception of Loligo squid, Canadian vessels currently have access to all species covered by the Agreement, either in the Canadian zone or in the boundary region on Georges Bank.

Other cautions concerning the reliability of available data, its completeness, or problems with quantification and forecast techniques are contained in the text or in the footnotes to the tables, and should be carefully noted.

b. Short Term Impacts

Short term impacts, both positive and negative, would result primarily from changes in the supply of fish available to harvesters from the stocks covered. Processor and consumers would also be affected by the proposed action's effect on supply, but to a lesser extent than harvesters because of greater substitution possibilities. The proposed action would affect short term supply by requiring that the Councils or the Commission establish total allowable catches (TAC's) annually for each stock, and by requiring that each country fish only up to its entitlement percentage share. To evaluate the potential impact of these requirements on supply two comparisons are helpful (1) whether the recent total catch from

a given stock is above or below the potential long term annual average yield, and (2) whether the recent U.S. catch is more or less than the share that would be available to the United States under its entitlement.

The comparison between the recent total catch and the potential annual average indicates whether a stock is being exploited above or below the level thought consistent with long term resource productivity. If above, long term productivity may or may not be threatened depending on the extent of the overage and the length of time catches at such levels are sustained.

The potential annual yield from the stock represents an average that in any given year or years can be exceeded to some extent, provided the average in the long term is maintained. Nevertheless, where the recent total catch is significantly above the potential annual average, the TAC under the proposed action might be established at a level lower than the recent total catch in the interest of resource conservation. This action would reduce the supply available to all harvesters in the short term without reference to entitlements. Where the recent catch from a stock is lower than the potential annual average, opportunities exist for expansion. In some cases this expansion could take place rapidly simply by increasing effort; in others, however, particularly where stock abundance has been affected by past

overfishing, expansion would be more gradual to allow for stock rebuilding.

The comparison between recent U.S. catch and the share of the recent total that would be available to the United States under its entitlement offers a rough approximation of whether U.S. harvesters would be likely to benefit from or be adversely affected by the proposed action in the short term. This second comparison must be made in conjunction with the first since it is not accurate in all cases to assume that TAC's under the proposed action could or would be set at the level of recent total catches, as mentioned.

Table III makes both comparisons for each stock covered by the proposed action with the exception of offshore lobster in Subdivision 5Ze (discussed with Other Fisheries).

Table III demonstrates that short term supplies available to harvesters are unlikely to be affected by the proposed action for the majority of stocks covered. In most cases, the shares available to the United States would be somewhat greater under the proposed action than recent U.S. shares of the total catch from the stocks.

For five stocks, however, this is not the case. These are: scallops in 5Ze, pollock in 4VWX+5, redfish in 5, cusks in 5Ze, and white hake in 5. Three of these stocks, 5Ze scallops, 4VWX+5 pollock, and 5 white hake were exploited in 1978 at levels above the potential annual average. Overages

TABLE III. Comparison of Potential Catch with 1978 Total Catch and U.S. Entitlement at 1978 Total Catch Level with 1978 Actual U.S. Catch for Agreement Stocks.

Stock	Potential catch	1978 total catch	Potential increase		U.S. entitlement		1978		Potential short-term		Value of potential increase (decrease) at 1978 U.S. ex-vessel prices (US \$1,000)
			(decrease) above catch	(below) 1978 total catch	at 1978 total catch	at 1978 total catch	U.S. catch	(below) 1978 U.S. catch	(decrease) above		
Herring 4WX (adult) 5Y 5Z+6	90-104.0	80.2	9.8-23.8	0	0	0	0	0	0	0	0
	16.0	18.8	(2.8)	18.8	18.8	18.8	18.8	0	0	0	0
	120.0	2.1	117.9	1/	1/	2.1	2.1	1/	1/	1/	1/
Scallops 5Ze	10.0	17.9	(7.9)	4.8	4.8	5.6	5.6	(0.8)	(0.8)	(4,528)	(4,528)
Cod 4Vsw 4X (offshore) 5Y 5Z	7.0	25.4	(18.4)	0.4	0.4	0.02	0.02	0.38	0.38	185	185
	4.0	2/	2/	2/	2/	0.3	0.3	2/	2/	2/	2/
	8.0	12.8	(4.8)	12.6	12.6	12.4	12.4	0.2	0.2	98	98
	35.0	34.3	0.7	28.5	28.5	25.4	25.4	3.1	3.1	1,683	1,683
Haddock 4VW 4X 5	28.0	5.9	22.1	0.6	0.6	0.1	0.1	0.5	0.5	358	358
	26.0	26.7	(0.7)	2.7	2.7	1.1	1.1	1.6	1.6	1,084	1,084
	50.0	27.5	22.5	20.2	20.2	16.7	16.7	3.5	3.5	2,448	2,448
Mackerel 3+4 5+6	210.0	30.0	180.0	20.0	20.0	1.6	1.6	18.4	18.4	10,742	10,742
Pollock 4VWX+5	42.0	45.3	(3.3)	11.6	11.6	17.7	17.7	(6.1)	(6.1)	(2,272)	(2,272)
Redfish 4VWX 4RST 3-0 5	20.0	15.5	4.5	5.4	5.4	2.1	2.1	3.3	3.3	1,240	1,240
	16.0	8.5	7.5	3/	3/	0	0	3/	3/	3/	3/
	20.0	6.9	13.1	0.6	0.6	0	0	0.6	0.6	227	227
	15.0	14.1	0.9	13.0	13.0	14.0	14.0	(0.05)	(0.05)	(19)	(19)
Silver Hake 5Ze	55.0	10.0	45.0	9.0	9.0	6.4	6.4	2.6	2.6	772	772
Red Hake 5Ze	15.0	4.2	10.8	3.8	3.8	0.2	0.2	3.6	3.6	879	879
Cusk 5Ze	1.0	0.8	0.2	0.3	0.3	0.4	0.4	(0.1)	(0.1)	(47)	(47)
White Hake 4VWX 5	8.0	3.8	4.2	0.2	0.2	0.03	0.03	0.17	0.17	67	67
	3.0	4.0	(1.0)	3.7	3.7	3.8	3.8	(0.1)	(0.1)	(29)	(29)

TABLE III (cont'd)

Argentine 4VMX+5	17.0	1.9	15.1	0.5	0	0.5	1954/
Other Groundfish 3+4	200.0	188.7	11.3	1.9	0.2	1.7	699
5+6	70.0	66.4	3.6	65.8	65.6	0.2	66
Squid <u>Illex</u> 3+4	120.0	92.7	27.3	0	0	0	0
5+6	30.0	6.3	23.7	6.3	0.5	5.8	1,270
Squid <u>Loligo</u> 5+6	44.0	4.9	39.1	4.5	1.3	3.2	3,387
Offshore Lobster 5Ze	2.0	5/	5/	5/	5/	5/	5/

1/Neither the United States nor Canada has had a significant traditional fishery for herring in 5Z+6, although this fishery offers significant future opportunities for U.S. fishermen. The low total catch in 1978 in comparison with the potential catch from this area reflects more the level of effort in the fishery rather than the current status of the resource, i.e., more could be caught from this stock in the short term if more effort were applied without affecting long term resource productivity. For this reason, it would be inaccurate to use the 1978 total catch as a yardstick for measuring either the short term TAC or the U.S. entitlement. No adverse impact on the human environment is likely to result in the short term from establishing an overall TAC and limiting the U.S. catch to the entitlement percentage share contained in the Agreement.

2/The 1978 total catch of cod in 4X amounted to 23,638 mt but it is not known what portion of this amount was taken in the offshore fishery. Under the Agreement, the United States would be entitled to 7.5 percent of the annual permissible commercial catch from the 4X offshore cod stock. That percentage would be available to U.S. fishermen largely as a bycatch in the 4X haddock fishery.

3/Under the Agreement, the United States would receive 10 percent of the annual permissible commercial catch of redfish in area 4RST allocated by Canada to those vessels in its fishing fleet that are not based in the Gulf of St. Lawrence. Although the amount so allocated in 1978 is not known, any amount available to the United States under its entitlement would represent a net increase to U.S. fishermen since they now harvest no redfish in this area.

4/Because insignificant amounts of Argentine are landed in the United States, there is no established U.S. market for this particular species. Rather, Argentine are classified for most purposes as "other groundfish." For this reason, the 1978 value for "other groundfish," as determined by NOAA/NMFS for the purpose of establishing foreign fishing fees has been used to determine the approximate value of the potential short term increase with the proposed action.

5/Data with respect to lobster catches in 5Ze are incomplete since many lobsters caught in trawling operations, as opposed to those caught by means of fixed gear, are not reported. As the result, available data from this offshore fishery do not adequately reflect actual catches. Until the maritime boundary is delimited, the Agreement provides that fishermen of each country may fish for lobster in the disputed portion of 5Ze with no expansion of their directed fisheries for this stock. Thus, in the short term, no adverse impact on the human environment is likely to result from the proposed action.

- Sources: a) Potential catch figures--Table of "Provisional Estimate of Potential Long-Term Sustainable Annual Average Catch Levels from Selected Stocks (Assuming Rebuilding and Conservation of Stocks)" prepared by the Northeast Fisheries Center, NMFS, and distributed by the Department of State in June 1979.
- b) 1978 total catches (all countries) and U.S. catches--Data collected by the International Commission for the Northwest Atlantic Fisheries as contained in tables submitted to the Subcommittee on Fisheries, Wildlife Conservation and the Environment of the House Merchant Marine and Fisheries Committee by NOAA Deputy Administrator James P. Walsh on September 6, 1979.
- c) Value data--derived using 1978 average U.S. ex-vessel prices per metric ton contained in the U.S.-Canada East Coast Fisheries Agreement Data Sheets distributed by the Department of State in June 1979.

ranged from slight in the case of pollock and white hake to significant in the case of scallops. Thus, the potential decrease below the 1978 U.S. catch could be more substantial in the short term than that shown in the table if conservation requirements under the proposed action resulted in a TAC less than the recent total catch in these fisheries.

The potential decrease in supply available to U.S. harvesters of white hake in 5 could be recouped by an increase in the supply of white hake available to them in 4VWX. The decrease in the redfish supply available from Area 5 would also be more than offset by corresponding increases in the redfish supply available to the U.S. in areas 4VWX, 4RST, and 3-0. The potential decrease in the supply of 5Ze cusk (100 tons) could be offset somewhat if the TAC for cusk were set at, rather than below the potential annual average level. There is no indication that management concerns would preclude doing so.

Significant decreases that would not be offset by increases elsewhere would be likely only for scallops in 5Ze and pollock in 4VWX+5. It is difficult to determine whether the potential decrease in the pollock fishery would be as substantial as that shown, however, since U.S. pollock landings in 1978 may have been augmented to some extent by misreported catches of other species.

## Pollock Fishery

Pollock are generally harvested by mobile otter trawl gear, by gillnets, and by line trawls. In 1977, some 600 vessels landing fish in New England ports reported using otter trawls. Sixty-three vessels reported using gillnets while 23 reported using line trawls. The average vessel in the current otter trawl fleet was built 26 years ago, has an average of 66 gross registered tons, and carries a crew of four. The average gillnetter and line trawler are considerably smaller (45 and 23 GRT respectively) and younger (18 and 19 years old respectively) and carry smaller crews (usually 3). In 1977 pollock landings accounted for 3.2 percent of the total revenues to otter trawlers in New England. By port, only in Gloucester and Boston did landings of pollock by otter trawlers exceed 3 percent of total revenues (6.5 percent in Gloucester; 10.2 percent in Boston).

In comparison, 1977 pollock landings accounted for 34.4 percent of total revenues to gillnetters in New England. Three-fourths of the gillnetters active in 1977 landed their catches in Maine ports. In York County and in Portland and Portland County pollock landings accounted for about 30 percent of total revenues in 1977. In Massachusetts, in Gloucester and on the South Shore pollock landings accounted for 20.2 percent and 12.5 percent of total revenues to gillnetters in 1977.



In addition to otter trawlers, gillnetters and line trawlers, an unknown number of small "under tonnage" vessels (vessels which carry no Guard documentation) account for between 15 and 20 percent of pollock landings. These vessels predominantly use line trawls (62.4 percent) and gillnets (22.3 percent).

Processors of domestic origin pollock are located primarily in Maine and Massachusetts. Most process a variety of other fresh fish species in addition to pollock. Many are relatively small, labor-intensive, family-type establishments. NMFS unpublished data for 1976 indicate that 53 New England plants processed some quantity of pollock. The majority of these (37) produced fresh raw fillets. The next largest number (9) produced frozen raw fillets.

The impact on harvesters and processors of a potential reduction in the supply of 4VWX+5 pollock depends on (1) the extent of the reduction, and (2) their ability to substitute other species or other sources for pollock supplies from 4VWX+5 at current levels. The impact on otter trawlers would be less significant than the impact on gillnetters or line trawlers since otter trawlers, except perhaps in Gloucester and Boston, harvest pollock largely as a bycatch in other groundfish fisheries. Otter trawlers in this sense would be affected primarily by any bycatch limits introduced. Gillnetters and line trawlers, on the other hand, might have

to shift some effort to other fisheries. Opportunities would seem to exist for doing so, particularly in the red hake fishery although market incentives are not as great.

Processors would have two possible options if faced with reduced supplies of 4VWX+5 pollock. (1) process other species, or (2) obtain raw materials from other sources, probably imports. If raw materials were obtained from imports, processors would probably find it necessary to change the product forms produced from raw fillets fresh and frozen to sticks and portions. Currently U.S. processors who produce sticks and portions rely almost entirely on imports of frozen blocks and slabs. This alternative would be available to the larger processors but would probably not be available to the smaller, family-type establishments.

### Scallop Fishery

The traditional scallop vessel is equipped with two iron dredges that are dragged across the bottom simultaneously brought up one at a time and dumped on deck. Scallops are usually shucked on board where the edible adductor muscles or "meats" are washed, packed in 40-pound bags, and iced. The remaining shells, undersized scallops and viscera are discarded overboard. In addition to these "traditional" vessels, numerous smaller vessels use commercial trawls to harvest scallops. Many keep the whole scallop and unload

at ports equipped to shuck on land. Very small scallops are often processed in this kind of operation.

The traditional New Bedford type scalloper is between 70 and 100 feet long and averages about 149 GRT, although the trend is toward larger vessels. It carries a crew of 9 to 11 and makes 20 to 25 trips per year, each averaging between 8 and 10 days.

In recent years the fishery has taken place in two areas: the Mid-Atlantic grounds off New Jersey and on Georges Bank. On Georges Bank itself, two areas have been important scallop grounds: south western and the northeast parts of the Bank.

U.S. fishermen developed the Georges Bank scallop fishery well before the Second World War. Canadian fishermen began scalloping on Georges Bank about 1951, although the United States dominated the fishery until 1965. About that time, many U.S. scallopers shifted their effort to the newly discovered Mid-Atlantic grounds.

The U.S. scallop fleet is divided between New England based vessels and vessels based in the Mid-Atlantic area and south to North Carolina. New England vessels accounted for 67 percent of U.S. landings in the period 1975-77. Of this amount, 65 percent was harvested by dredgers while about 2 percent was harvested by otter trawlers. In the same period, Mid-Atlantic vessels accounted for 33 percent of U.S.

landings of which 20 percent was harvested by dredgers while 13 percent was harvested by "netters".

In the 1975-77 period, 36 percent of the U.S. catch came from the two areas on Georges Bank while 64 percent came from the Mid-Atlantic grounds. New England based vessels accounted for 100 percent of the Georges Bank catch and 48 percent of the Mid-Atlantic catch.

The proposed action would extend only to the Georges Bank scallop fishery. The Mid-Atlantic fishery is beyond the scope of the Agreement and will be managed exclusively by the United States in accordance with any fishery management plan developed by the Fishery Management Councils.

Nevertheless, because the Georges Bank scallop fishery yields a significant percentage of total U.S. scallop landings, any decrease in the supply of scallops available to U.S. harvesters in the Georges Bank scallop fishery would have a significant impact on the human environment, particularly on New England based scallop dredge operators.

Such a potential decrease would also be significant in view of recent information concerning scallop abundance in the Mid-Atlantic area and on the western side of Georges Bank. The 1978 scallop assessment prepared by the NMFS

Northeast Fisheries Center indicated that for the intermediate period ahead scallop abundance in these areas could be expected to decline as the strong 1972 year-class

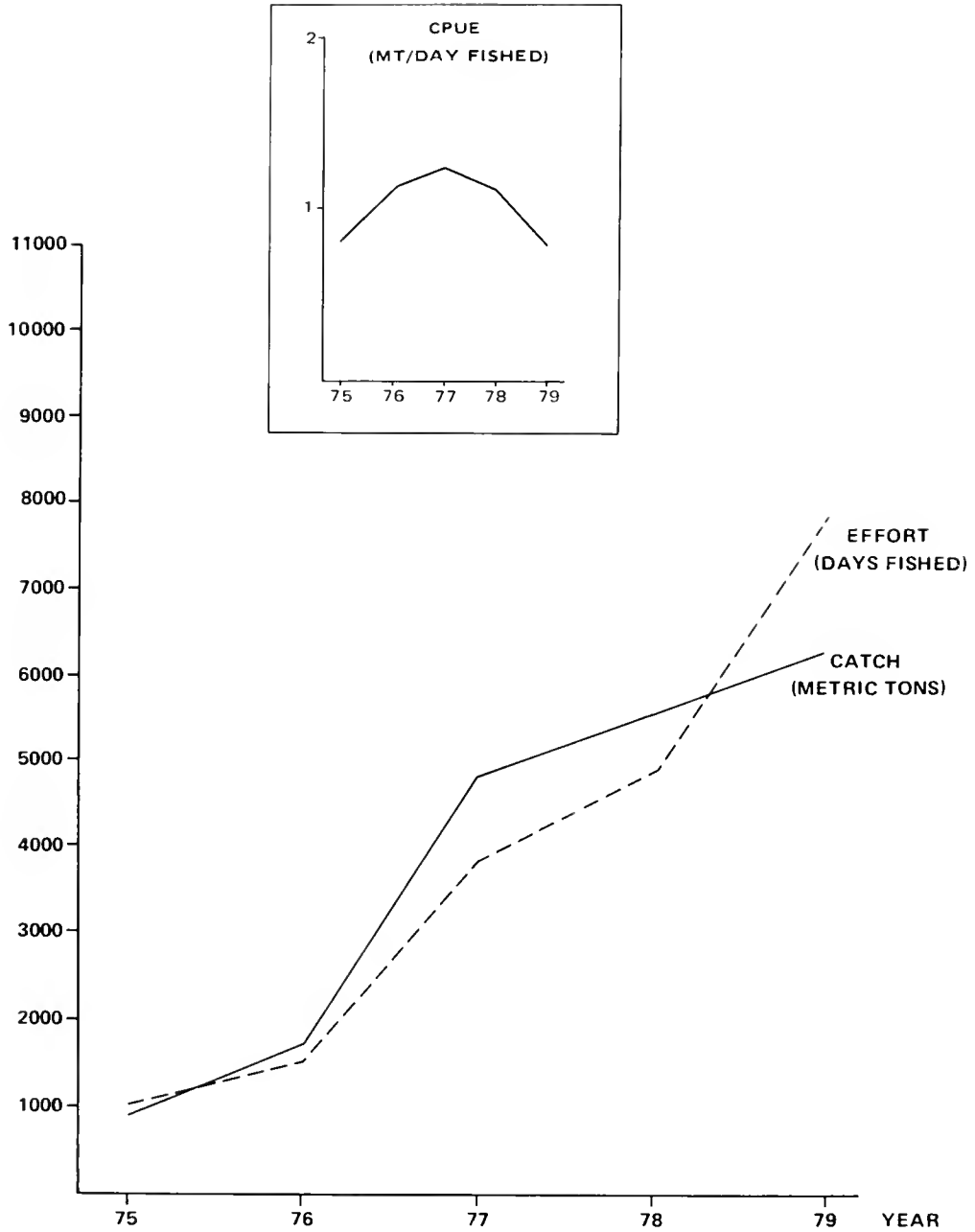
was fished out since no strong year-classes had recruited in these areas. Preliminary 1979 data support that conclusion.

Recent high yields have been the result of a single good year-class (1972) which was observed throughout the three principal areas in which the scallop fishery is conducted; i.e., the Mid-Atlantic, the Georges Bank, and the Northern Part on Georges Bank. As mentioned, recruitment prospects now are poor in the Mid-Atlantic and Great South Channel areas. Even if a good year-class materialized in these areas, it would require about three years to develop to a harvestable stage.

Also significant is the fact that many new vessels have entered the scallop fishery in recent years, probably in response to the dramatic increase in the price of scallops. In 1974, 34 U.S. vessels reported dredging for scallops; by 1977 that number had risen to 155.

Under the proposed action, U.S. scallopers would face a significant decrease in the supply of scallops available to them on Georges Bank, as shown in the table, even if the total catch at the 1978 level could be maintained. The nine percent increase in the U.S. 1979 total Georges Bank scallop catch over 1978 was the result of a 45 percent increase in effort, as shown in Figure 6. Further concentrations of U.S. effort in the northeastern part of Georges Bank combined with continued Canadian effort at current

Figure 6



**U.S. SEA SCALLOP CATCH, EFFORT,  
AND CATCH PER UNIT EFFORT (CPUE)  
Subdivision 5Ze**

Data source: NOAA/NMFS, Northeast Fisheries Center. 1979 Data provisional. 3668 3-80 STATE(RGE)

levels may exceed the level conducive to recovery of the scallop stock in the short term, and may also have more far-reaching adverse effects than have thus far been realized.

The impact of a decrease in the scallop supply available to U.S. harvesters on Georges Bank would primarily affect scallopers in Massachusetts ports, particularly the larger vessels (over 125 GRT) in New Bedford and Provincetown, medium size vessels (61-125 GRT) in New Bedford and Sandwich, and smaller vessels (less than 60 GRT) in New Bedford, Provincetown, Sandwich, and Barnstable and Dukes Counties.

Conversion of such vessels for operations in other fisheries would be a possibility, but not without substantial costs. It is estimated, for example, that the cost of converting a large scallop vessel could run as much as \$100,000.

Since most scallops harvested in Subdivision 5Ze are processed at sea, a reduction in the available supply from this area would have little impact on land based processors. Consumers could be affected by a possible increase in the price of scallops, although supply would probably not be affected because of import possibilities.

#### Other Fisheries

Because of 1978 total catches in certain other fisheries exceeded the estimated potential annual average yield and there is sufficient price incentive to maintain catches at

those levels, it is possible that management decisions taken under the proposed action would impose certain restraints in the interest of long-term productivity. This would decrease supplies available to harvesters in these fisheries as well. Four such stocks can be identified from the table: herring in 5Y, cod in 4VSW and 5Y, and haddock in 4X.

Whether or not such decisions are made would depend on the social, economic and other relevant considerations taken into account in the decision-making process. Decisions with respect to herring and cod in 5Y in any event would be made by the United States; those with respect to cod in 4VSW and haddock in 4X would be made by Canada.

With respect to other species, access to the U.S. zone would enable Canadian vessels to operate over a broader area but, as mentioned, the value of that access except in the Loligo fishery cannot readily be determined since those vessels could approximate or exceed their entitlements in the absence of the Agreement by increasing their effort in the boundary region or in the Canadian zone.

#### Loligo Fishery

In 1980, the value of Loligo squid that would be available to Canada in the U.S. zone is estimated at \$3.9 million. (Based on the average ex-vessel U.S. price of Loligo squid in 1979, as used to assess poundage fees paid by foreign vessels operating in the U.S. zone in 1980.) However,



this direct benefit to Canada does not equate to a direct cost to the United States, since 70 percent of the Loligo squid in the U.S. zone is currently surplus to estimated U.S. harvesting capacity. In 1978 U.S. fishermen harvested 640 tons of squid, although the optimum yield was established at 44,000 tons. In 1979 Loligo squid, worth approximately \$29.8 million was made available for harvest by foreign nations other than Canada in the U.S. zone. Based either on actual or estimated U.S. harvests, there is substantial room for U.S. fishermen to expand in this fishery even with Canada's 10-year 9 percent entitlement under the Agreement.

While the United States eventually may harvest 91 percent of the Loligo squid in its zone and be in a position to export some 40,000 tons annually, it is unlikely Canada, with 9 percent or 3,960 tons, will affect either the world price or the ability of U.S. fishermen to market their catches overseas. Although Canada has considerable Illex squid in its zone, differences in price commanded by the two species suggest that Illex is less preferred than Loligo and that it may not be a direct substitute in the market place.

#### Lobster

Data with respect to lobster catches in area 5Ze are incomplete since many lobsters are caught in trawling operations, as opposed to those caught by means of fixed gear, are not reported. As a result, available data from

this offshore fishery do not adequately reflect actual catches. Until the maritime boundary is established the Agreement provides that fishermen of each country may fish for lobster in the disputed portion of Subdivision 5Ze with no expansion of their directed fisheries for this stock. Thus, since available supply would be maintained at recent levels, no adverse impact is likely to result in the short term from the proposed action.

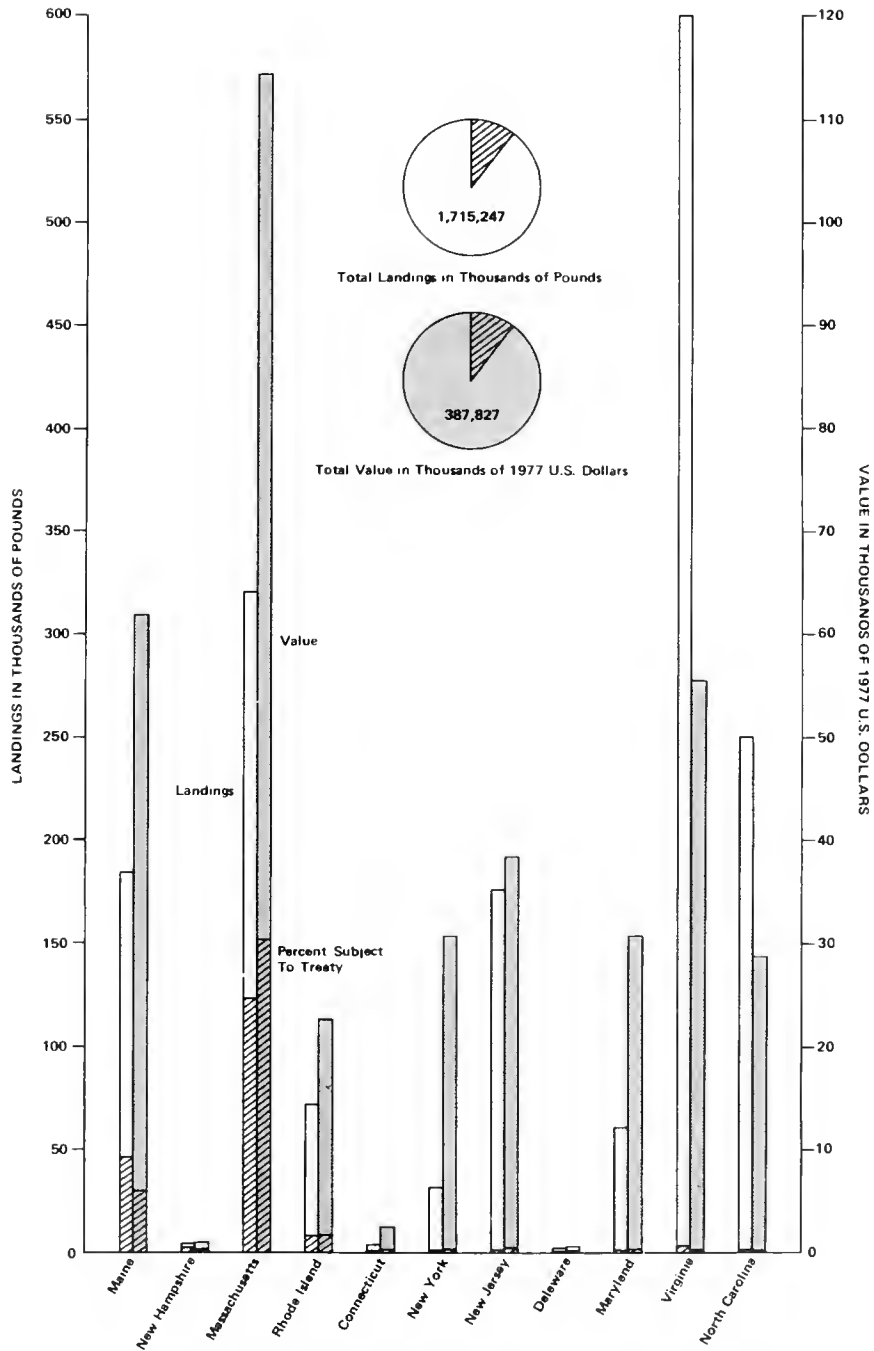
It should also be noted that, based on 1977 figures\*, the fishery resources affected by the Agreement\*\*, in relation to all fishery resources, comprise not more than ten percent of the fish landed and ten percent of the total value of the fisheries in the New England and Mid-Atlantic States. (See figure 7).

\*The most recent year for which state-by-state statistics are available.

\*\*"Other Groundfish" are not included as "species affected" by the Agreement because the U.S. entitlement is 99% and the U.S. has exclusive management authority for this category in the U.S. zone.

Figure 7

PERCENTAGE OF SPECIES AFFECTED BY THE AGREEMENT\*  
RELATIVE TO TOTAL 1977 LANDINGS AND VALUE BY STATE



\*"Other Groundfish" are not shown as species affected by the Agreement because the U.S. entitlement is 99% and the U.S. has exclusive management authority for this category in the U.S. zone

Data source: U.S. Department of Commerce, NOAA, NMFS *Fisheries of the United States 1978*, Current Fisheries Statistics No. 7800 Washington, D.C. Government Printing Office, 1979

Tabulation: NMFS Statistics Branch NE

3660 3-80 STATE(RGE)

c. Long Term Impacts

Assessing the long term socio-economic impacts likely to result from the proposed action is difficult since the Agreement does not establish specific socio-economic policies. Rather, it seeks to create a framework within which effective management of living resources can take place. The implementation of management policy will be the on-going responsibility of both Parties, either through their respective fisheries management authorities in the case exclusive and primary management responsibility (Categories C and B), or through the Commission in the case of joint management (Category A), consistent with the provisions of the Agreement. The future decisions and actions of these authorities are impossible to predict, since they are likely to be affected by social and economic factors and future events unknowable at present.

Biological analyses in fisheries management simply establish underlying resource productivity. Normally that productivity will support a range of management alternatives. Within the range economic, social, and other human considerations will determine the most acceptable or desirable combination of current and future uses. For example, with respect to depleted stocks, rebuilding efforts can be undertaken at various rates of speed. They can be maximized as the Regional Councils are attempting to do in the case of Atlantic mackerel and Georges Bank herring, or effected more

gradually as the New England Council has chosen to do in the case of Atlantic groundfish. Thus, specific harvest levels in any given year depend not only on the biological status of the stocks but also on management decisions made in light of social and economic circumstances.

Since it is impossible to predict exactly which combination of alternative management decisions will be implemented in the future, particularly in the long term, a precise valuation of long term socio-economic impacts cannot be made with the information available at present. It is possible, however, to make some qualified assumptions, and then, based on the best information available, to estimate the relative distribution of potential long term economic benefits under the provisions of the Agreement. The principal benefit of the proposed action would be its assurance of long term resource productivity, and evaluation of the long term impacts on the human environment should focus on how each country might benefit from that productivity. To do so, it is necessary to project what long term resource productivity may offer in terms of annual harvests from the stocks.

Although scientific knowledge of the fisheries affected by the Agreement is less than complete, estimates can be made of the potential average annual yields that may be sustainable over the long term from the various stocks. The estimates listed in Table II are based on the best current

scientific knowledge of the fisheries, and assume rebuilding of several stocks as well as effective conservation and management of all stocks.

Based on existing knowledge of resource dynamics and past observations of the effects of various rates of exploitation on resource abundance, Table IV projects the average annual harvesting potential thought consistent with the long term resource productivity from stocks covered by the Agreement. Because these potential levels are averages, in any given year or years actual harvests may exceed or fall below them, provided the average itself is maintained over time. Given the management uncertainties involved, simultaneous maximization of yields for all stocks covered by the Agreement is not likely, and may not even be biologically possible. For the purposes here, however, the simplifying assumption is made that simultaneous maximization can be achieved.

By applying each country's percentage-share entitlements to these potential harvest levels it is possible to estimate (1) the extent to which existing levels differ from potential levels, and (2) the relative distribution of benefits under the Agreement at these potential levels.

Estimating the value of these potential harvests in the long term presents a more difficult problem. Since, for the most part, the potential catch levels shown in Table IV represent significant increases beyond existing levels, it

is unrealistic to use current prices to evaluate future harvests because of the elasticity of prices in response to increased or decreased supply. On the other hand, it is not possible to project future prices at such levels without making so many assumptions about demand variables as to defeat the reliability of the exercise. Valuing shares of shares of potential harvests using 1978 prices would be inaccurate in forecasting actual values at these potential levels since price is a function of numerous variables. To make any prediction of actual future prices would require separate sets and subsets of assumptions about each variable, each set and subset making the end result more tenuous and less reliable than the last. However, assuming that the values of the various species in relation to each other remain approximately the same over time, valuing potential shares at average 1978 ex-vessel prices illustrates relative benefits to each country. Even so, existing relative values of the various species are themselves likely to be affected by demand and supply in the market place, but exactly how they will be affected is impossible to predict. Therefore, the long term values estimated below should be taken only as a general indication of potential changes in relative distribution of benefits, and not as a forecast of projected actual revenues.

It is also assumed for the purpose of this analysis that the entitlement shares provided in the Agreement would remain the same over the long term. In reality, of course, the Agreement provides for adjustment of shares at ten year intervals, consistent with the boundary adjudication. That outcome is impossible to predict at this time. Finally, it is assumed that U.S. and Canadian fishermen would increase fleet capacity and effort to the point that their respective entitlement shares would be fully utilized.

Shares values are computed using 1978 average U.S. ex-vessel prices, and potential harvests are compared with 1978 base year harvest levels, except where noted.

The stocks covered by the Agreement can conveniently be divided into three categories shown in Table IV:

1. Those which are located primarily in the undisputed Canadian zone, comprising about 42 percent of the tonnage and 31 percent of the value of the potential long term annual harvest of all stocks covered by the Agreement.

2. Those which are located primarily in the undisputed U.S. zone, which comprise about 8 percent of the potential annual tonnage and 11 percent of the potential value, and

3. Those which range significantly into or across the boundary region and comprise the remaining 50 percent of the potential annual tonnage and 58 percent of the value.

In the undisputed Canadian zone, U.S. fishermen would be entitled to a potential annual harvest of 15.5 thousand



TABLE IV. U.S.-CANADA AGREEMENT ON EAST COAST FISHERY RESOURCES  
 Illustration of Possible Value to the United States and Canada of Their Respective Shares of  
 Stocks Covered by the Agreement in Terms of Potential Annual Average  
 Long-Term Sustainable Catch Levels\* and 1978 Ex-Vessel Values\*\*

Stocks Primarily in Undisputed Canadian Zone	Potential Annual Long-Term Sustainable Catch Levels* Quantity	Value at U.S. Average 1978 Prices		U.S. Share Percentage	Canada Share Percentage	Value of Agreement Share in Terms of Potential Annual Long-Term Sustainable Catch Levels and 1978 Average U.S. Ex-Vessel Prices	
		(Metric tons)	(1000 U.S.\$)			U.S.	Canada
<u>Herring 4WX (adults)1/</u>	97,000		12,901	0	100	0	12,901
White hake 4VWX	8,000		2,752	6.0	94.0	165	2,587
Illex squid 3+4	120,000		26,160	0	100	0	26,160
Cod 4VSW	7,000		3,829	1.4	98.6	54	3,775
Cod 4X (offshore)2/	4,000		1,984	7.5	92.5	149	1,835
Haddock 4VW	28,000		19,796	10.0	90.0	1,980	17,816
Haddock 4X	26,000		18,382	10.0	90.0	1,838	16,544
Redfish 4VWX	20,000		7,560	35.0	65.0	2,646	4,914
Redfish 4RST	16,000		6,048	3/	3/	0	6,048
Redfish 3-0	20,000		7,560	4/	4/	227	7,333
Other groundfish 3+4 5/	167,327		68,939	1.0	99.0	689	68,250
<b>TOTAL</b>	<b>513,327</b>		<b>175,911</b>			<b>7,748</b>	<b>168,163</b>

Stocks Primarily in Undisputed U.S. Zone	Potential Annual Long-Term Sustainable Catch Levels* Quantity	Value at U.S. Average 1978 Prices		U.S. Share Percentage	Canada Share Percentage	Value of Agreement Share in Terms of Potential Annual Long-Term Sustainable Catch Levels and 1978 Average U.S. Ex-Vessel Prices	
		(Metric tons)	(1000 U.S.\$)			U.S.	Canada
<u>Herring 5Y (adults) 1/</u>	16,000		2,128	100	0	2,128	0
Illex squid 5+6	30,000		6,540	100	0	6,540	0
Cod 5Y	8,000		4,376	98.4	1.6	4,306	70
Loligo squid 5Z+6	44,000		46,288	91.0	9.0	42,122	4,166
<b>TOTAL</b>	<b>98,000</b>		<b>59,332</b>			<b>55,096</b>	<b>4,236</b>

TABLE IV (cont'd). U.S.-CANADA AGREEMENT ON EAST COAST FISHERY RESOURCES  
 Illustration of Possible Value to the United States and Canada of Their Respective Shares of  
 Stocks Covered by the Agreement in Terms of Potential Annual Average  
 Long-Term Sustainable Catch Levels\* and 1978 Ex-Vessel Values\*\*

Stocks Ranging Significantly into or Across the Boundary Region	Potential Annual Long-Term Sustainable Catch Levels* Quantity	Value at U.S. Average 1978 Prices (1000 U.S.\$)	Agreement		Value of Agreement Share in Terms of Potential Annual Long-Term Sustainable Catch Levels and 1978 Average U.S. Ex-Vessel Prices U.S. (1000 U.S.\$)	Canada (1000 U.S.\$)
			Percentage Share	Percentage Share		
<u>Stocks and Areas</u>						
Scallops 5Ze	10,000	55,900	26.65	73.35	14,897	41,003
Mackerel 3,4 Mackerel 5,6	210,000	122,640	60.0	40.0	73,584	49,056
Pollock 4VWX+5	42,000	15,624	25.6	74.4	4,000	11,624
Cusk 5Ze	1,000	402	34	66	137	265
Lobster 5Ze	2,000	8,170	6/	6/	7,124	1,046
Herring 5Z+6	120,000	15,960	7/66.66	33.33	7/ 10,640	5,320
Cod 5Z	35,000	19,145	83.0	17.0	15,890	3,255
Haddock 5	50,000	35,350	79.0	21.0	27,926	7,424
Silver Hake 5Ze	55,000	16,280	90.0	10.0	14,652	1,628
Red Hake 5Ze	15,000	3,630	90.0	10.0	3,267	363
Argentine 4VWX+5	17,000	7,004	25.0	75.0	1,751	5,253
White Hake 5	3,000	1,032	94.0	6.0	970	62
Redfish 5	15,000	5,670	99.0	1.0	5,613	57
Other groundfish 5+68/	50,042	20,617	99.0	1.0	20,411	206
TOTAL	625,042	327,424			200,862	126,562

NOTES TO TABLE IV

- \* Provisional estimates that assume rebuilding and conservation of stocks.
- \*\* Derived from average 1978 U.S. ex-vessel prices in Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut.
- 1/ Entitlements for herring apply only to the adult fishery, and do not include the juvenile fishery which takes place within three nautical miles of the coast of the United States and Canada. The potential annual average harvest level shown is the midpoint between the possible range (90-104,000 MT) identified in the Pelagic Subcommittee Report (78/5) of the Canadian Atlantic Fisheries Scientific Assessment Committee as the 1979-86 estimated range.
- 2/ Entitlements for cod in Area 4X apply only to cod located offshore in the portion of Area 4X south and east of straight lines connecting coordinates 44°20' north latitude, 63°20' west longitude; then 43°00' north latitude, 65°40' west longitude; then 43°00' north latitude, 67°40' west longitude. It is assumed that Canada's catch from this stock in 1977 was its ICNAF quota allocation of 3,600 tons. (Canada's catch from the entire Area 4X cod stock in both inshore and offshore areas was reported as 22,100 metric tons valued at about U.S. \$11 million on the basis of 1977 U.S. average ex-vessel prices.)
- 3/ The United States share of the allowable catch from this stock is 10 percent of any amount that may be harvested by Canadian vessels based outside the Gulf of St. Lawrence; Canada currently reserves the harvest entirely for vessels based in the Gulf of St. Lawrence.
- 4/ For redfish in Area 3-0, the U.S. entitlement would be 600 tons annually; the Canadian entitlement would be the remainder of the allowable catch, i.e., 100 percent less 600 tons.
- 5/ No assessment is available of the potential long term annual average harvest of "other groundfish," as defined in the Agreement, from Areas 3 and 4. Various approximations based on historic catch levels could be used.

NOTES TO TABLE IV (cont'd.)

For purposes here the 1975-77 average annual catch figure is listed. Because it is somewhat more conservative than the average annual catch figure during the period 1965-77 (200,000 MT) listed elsewhere in this statement, it offers a greater margin of safety and potentially a broader range of management options.

- 6/ The Agreement percentage shares for lobster in Subdivision 5Ze are provisionally assumed to be 87.2 percent for the United States and 12.8 percent for Canada, which are the relative shares each country took of the total Subdivision 5Ze lobster catch in 1975-77.

Until a maritime boundary is determined there would be nor expansion of either country's directed fishery for lobster in the boundary region unless otherwise agreed in the Commission established under the Agreement. After a maritime boundary is established, each country would manage and have exclusive access to lobster on its side of the boundary, unless otherwise mutually agreed.

- 7/ Percentage share that would prevail at the end of the initial 6-year period the Agreement is in force.

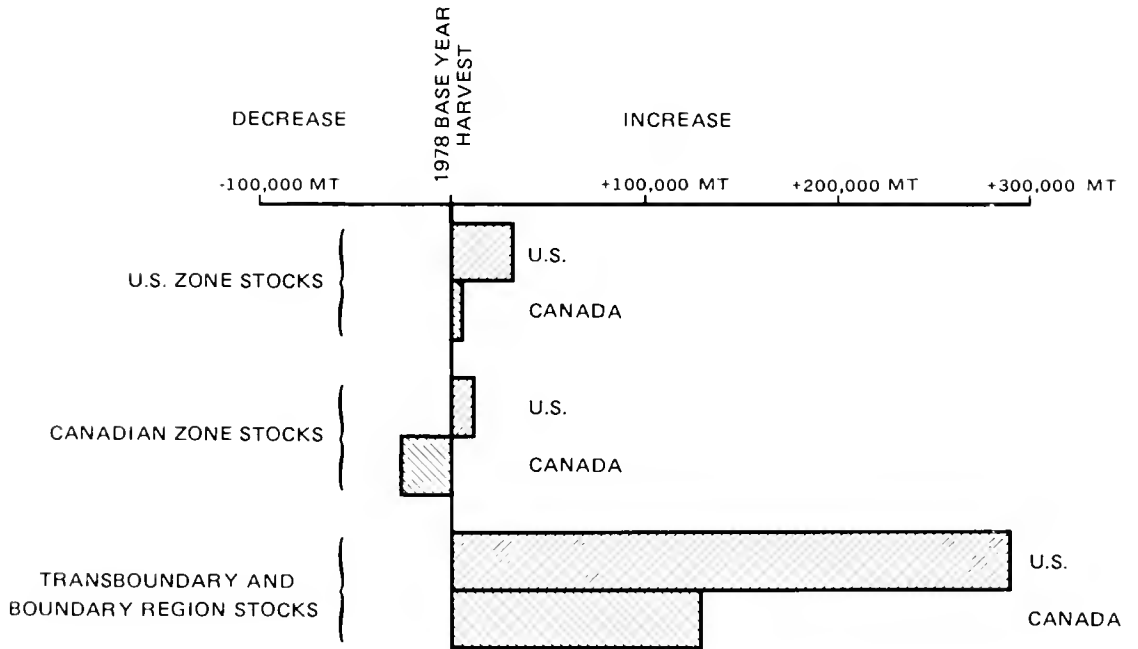
- 8/ No assessment is available of the potential long term annual average harvest of "other groundfish," as defined in the Agreement, from Areas 5 and 6. Various approximations based on historic catch levels could be used. For purposes here the 1975-77 average annual catch figure is listed. Because it is somewhat more conservative than the average annual catch figures during the period 1965-77 (70,000 MT) listed elsewhere in this statement, it offers a greater margin of safety and potentially a broader range of management options.

metric tons (MT) worth about \$7.7 million. After ten years, when the U.S. entitlement to Canadian redfish would terminate, the annual U.S. share remaining would be 7.9 thousand MT, valued at \$4.9 million. In 1978 U.S. fishermen caught only 3.7 thousand MT in the Canadian zone, and in 1977 only 5.5 thousand MT. Thus, the annual U.S. harvest in the Canadian zone could increase over 1978 levels by almost 12 thousand MT in the first ten years of the Agreement. (See figure 8). After termination of the U.S. redfish entitlement, there would still be a potential gain in annual catch of 4.2 thousand MT over 1978 levels. (In the absence of an agreement, of course, the United States would not have access to the undisputed Canadian zone.) Canadian fishermen, on the other hand, caught 25.5 thousand MT over their potential share of stocks covered by the Agreement in their own zone in 1978.

In the undisputed U.S. zone the potential annual Canadian entitlement share is estimated at 4.1 thousand MT, worth \$4.2 million, excluding transboundary and boundary region stocks. Since Canada's 1978 harvest in the U.S. zone was only about 400 MT, the annual Canadian catch could increase by 3.7 thousand MT under the Agreement, but only in the first ten years. At that time, the Canadian Loligo squid entitlement would terminate, and Canada's share of the

Figure 8

POTENTIAL LONG-TERM INCREASE (OR DECREASE) IN AVERAGE ANNUAL HARVEST\*



\* Based on entitlement shares of estimated potential long-term sustainable catch (see table), and assuming rebuilding of stocks.

3546 12-79 STATE (RGE)

potential annual catch would drop to 128 MT, worth an estimated \$70 thousand, less than Canada's 1978 harvest in the U.S. zone. U.S. fishermen, on the other hand, could potentially increase their average annual harvest by about 32 thousand MT over 1978 levels.

Thus, the United States would trade a potential annual catch of 4.1 thousand MT of fish in the U.S. zone, worth an estimated \$4.2 million, for 15.5 thousand MT of Canadian fish potentially worth \$7.7 million. After the reciprocal redfish and Loligo entitlements expire the potential annual U.S. harvest of Canadian zone stocks is estimated at 7.95 thousand MT, valued at \$4.9 million, while Canada would be entitled to a potential annual catch of 128 MT in the U.S. zone, worth about \$70 thousand.

Transboundary stocks which range significantly into or across the boundary region, comprise the largest portion of the stocks affected by the Agreement--slightly over half the total tonnage, and almost 60 percent of the value of the potential annual long-term yield for all stocks. U.S. fishermen would be entitled to about 68 percent of the long-term potential transboundary stock harvest, or 424.5 thousand MT annually. The potential value of that share, at 1978 prices is about \$200.9 million a year or 61 percent of the value of all transboundary stocks. As effective management is introduced under the Agreement, the U.S. fleet could

potentially increase its annual catch of transboundary stocks by about 290 thousand MT, more than tripling the 1978 catch level of 134.6 thousand MT.

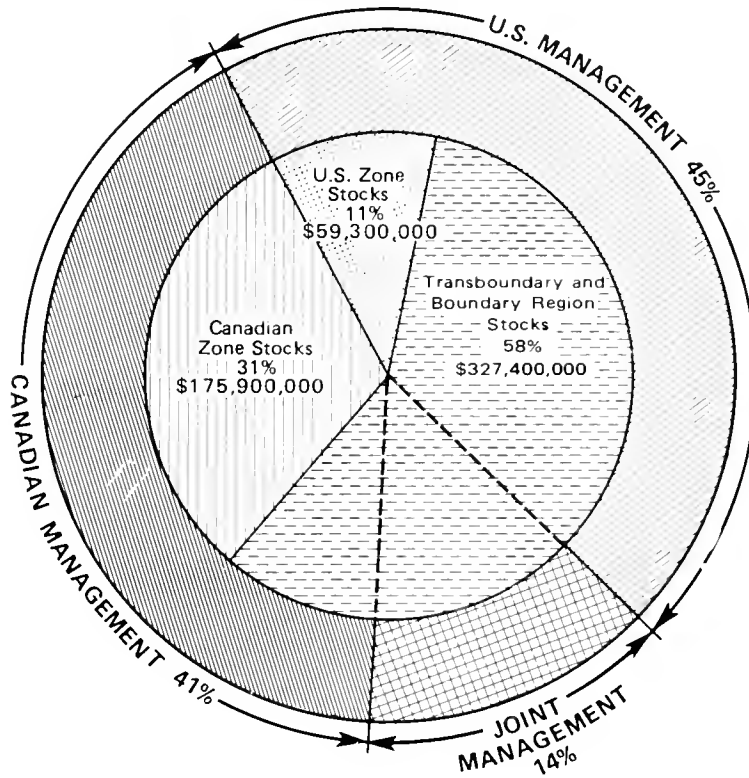
Canada has traditionally taken between 90 and 95 percent of its Subarea 5 and 6 catch from the boundary region, and can continue to do so in the absence of an Agreement. Under the Agreement, Canadian fishermen would be entitled to a potential annual harvest of 200.5 thousand MT or 32 percent of the total potential transboundary stock yield. The potential value of that share is \$126.6 million a year or about 39 percent. In 1978 Canadian fishermen took 72.4 thousand MT from transboundary stocks, and so could potentially harvest an additional 128.1 thousand MT a year under the Agreement in the long term.

#### Management Authority

Allocation of management authority is illustrated in figure 9. The United States would have primary management authority under the Agreement for all stocks located chiefly in the undisputed U.S. zone. The potential value of these stocks, at 1978 prices, is approximately \$59.3 million a year. Likewise, Canada would have primary management authority for all stocks located chiefly in the undisputed Canadian zone, potentially worth about \$175.9 million a year.



ALLOCATIONS OF PRIMARY MANAGEMENT AUTHORITY  
BY VALUE OF POTENTIAL HARVEST\*



\*Potential annual long-term sustainable catch, at 1978 exvessel prices in U.S. dollars.

3544 12-79 STATE (RGE)

For transboundary stocks, which range significantly into or across the boundary area, U.S. primary management authority would cover stocks potentially worth approximately \$191.3 million a year, or 58 percent. Canada would have primary management authority for stocks worth about \$56.0 million a year, or 17 percent. The remaining transboundary stocks would be managed jointly.

In sum, under the Agreement the United States would have primary management authority over stocks with a potential total annual value of \$250.6 million, or 45 percent, while Canada would manage stocks potentially worth \$231.9 million a year, comprising 41 percent. The remaining 14 percent would be managed jointly.

#### Access

One of the objectives of the Agreement is to preserve traditional fishing patterns in order to minimize adverse socio-economic impacts on either side. Consistent with this objective, there is no portion of the U.S. zone to which Canadian fishermen have access under the Agreement which has not been traditionally fished by Canadian fishermen. Except for Loligo squid, there is no portion of the Canadian zone to which U.S. fishermen have access under the Agreement which has not been traditionally fished by U.S. fishermen.

The only species covered by the Agreement which has not been fished traditionally by Canadian fishermen is Loligo squid.

#### Overall Long-term Benefits

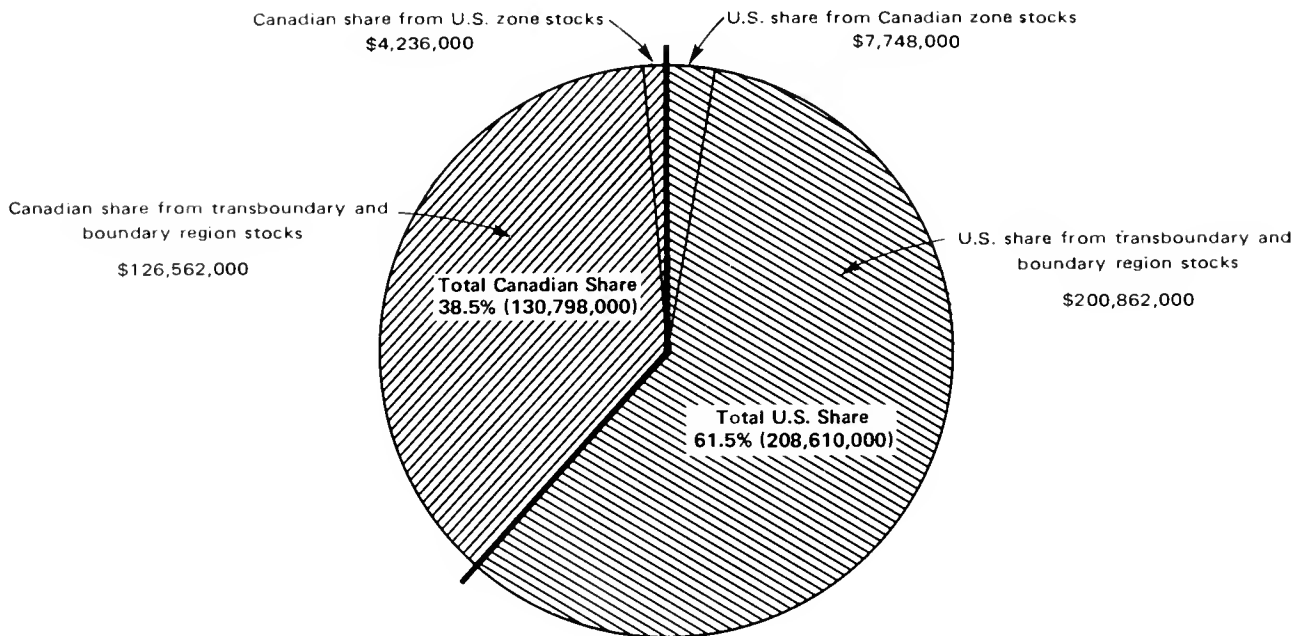
Under the cooperative management framework provided by the Agreement there is a potential for effectively managing and rebuilding the stocks in the long term, thereby substantially increasing the overall value of the total resource to the benefit of both countries. Although both countries will gain, as shown in figure 10, the distribution of potential benefits under the Agreement appears to favor the United States in the long term.

The Agreement provides for two types of "transactions"- first, a trade of access to U.S. fish for access to Canadian fish, and second, allocation of shares of the transboundary stocks. The fish caught by each country in its own undisputed zone are not counted in the transaction in this analysis, since they have not been available to the other side since reciprocal fisheries were suspended in June 1978, and are unlikely to be available in the future absent an agreement.

In the long term the United States would trade a potential annual catch of 4.1 thousand MT potentially worth \$4.2 million, for 15.5 thousand MT of Canadian zone fish potentially worth \$7.7 million.

Figure 10

DISTRIBUTION OF THE VALUE OF POTENTIAL ANNUAL  
LONG-TERM CATCH SHARES\*



\*Excluding each country's catch within its own zone.  
Based on potential annual average long-term sustainable catch, at 1978 exvessel prices.

In the allocation of shares of transboundary stocks, 61 percent by value could accrue to the United States, a potential annual value of \$200.8 million. The Canadian share would be about 39 percent, potentially worth \$126.6 million.

The combined long-term benefits to both countries, excluding each side's harvest in its own zone, could potentially total \$339.4 million annually. As shown in figure 10, 61.5 percent of this annual total, or \$208.6 million, would accrue to the United States. Canada's share would be 38.5 percent of the total, with a potential annual value of \$130.4 million.

#### Summary of Long-term Impacts

Based on the best current scientific estimates available, the potential increase in annual harvest under the Agreement would substantially benefit the U.S. fishing industry in the long term, assuming effective management and rebuilding of depleted stocks. Furthermore, a substantially greater proportion of the total potential long-term benefits would appear to accrue to the U.S. side, both in the exchange of access to stocks in the Parties' respective undisputed zones, and in the shared allocation of transboundary stocks.

B. Environmental Consequences of Alternatives to the Proposed Action

1. No Agreement

Two categories of consequences can be anticipated if the agreement is not implemented and not other action is taken to conclude a fishery agreement with Canada. First, the specific benefits to the United States that will accrue from the proposed action would be lost. Second, current risks to the environment would continue and potentially increase.

Specific benefits to the United States under the proposed action that would be lost under this alternative are numerous. In the absence of a fishery agreement, the United States and Canada would have no formal mechanism or procedure to coordinate conservation goals and management policies for shared resources. These goals and policies currently differ in several areas. For example, Canada favors commercial uses for the transboundary mackerel stock. In contrast, U.S. management plans for mackerel emphasize enhancement of the U.S. recreational fishery.

The stock is available in the undisputed fishery zones of both countries, and fishing in either Canadian or U.S. waters can affect the entire stock. In the absence of some means of striking a balance between potentially divergent interests, there is no assurance that each side will not embark on its own management policies reflecting its own conservation priorities and resulting in two separate approaches to the same stock of fish.

Similarly, in the absence of a fishery agreement, disagreements are likely to continue over appropriate national shares of annual harvests (even where these can be agreed) from stocks to which both countries have access either in their undisputed zones or in the boundary region on Georges Bank. For example, in October 1978, in response at least in part to what it perceived to be a relaxation of U.S. regulations in the groundfish fishery on Georges Bank, Canada relaxed trip limitations for its fishermen in that fishery. By year's end, the combined U.S. and Canadian catch of haddock in Subarea 5 and Statistical Area 6 exceeded 28,000 tons, whereas the New England Fishery Management Council had established the optimum yield for haddock at 20,000 tons. Similarly, U.S. and Canadian catches of cod from Subdivision 5Z and Statistical Area 6

exceeded 36,000 tons, whereas the New England Council had set the optimum yield at 26,000 tons. The result, if the optimum yields are used as a yardstick, was overfishing of two important stocks.

The proposed action would eliminate disagreements over national shares through its entitlement share provisions and would require that both countries observe the TACs established for each stock. Moreover, formal procedures would exist through which the Parties could discuss and resolve differences in management strategies. For Category A and B stocks, they would have recourse to binding dispute settlement.

As previously mentioned, since June 1978 U.S. fishermen have been excluded from undisputed Canadian waters. Under the proposed action they would regain access to these waters and be able to resume their traditional fisheries for redfish, cod, and haddock. In the absence of a fishery agreement, such access presumably would continue to be denied them.

Continued denial of access to the Canadian zone would substantially affect certain U.S. fishing ports, particularly in Maine and Massachusetts. For example, the NMFS study on the short term economic impact of the proposed action predicts that vessels over 125 feet in length from



Rockland and Portland could lose about 60 percent and 30 percent, respectively, of revenues they would otherwise gain with access to the Canadian zone. Lost access to haddock and cod in the Canadian zone could cause Boston and Gloucester to forego about \$2 million otherwise available in 1980.

If vessels which would otherwise operate in the Canadian zone shift their effort to the U.S. zone (as has already occurred) there would be (and have been) spillover effects on smaller vessel classes in terms of the erosion of relative shares of landings from various stocks. Thus, revenue losses forecast for some vessel classes would be "made up" by effort transfers from the Canadian to the U.S. zone, with resultant revenue transfers from smaller vessel classes to larger ones.

In addition, due to a reduced supply of raw fish from the Canadian zone, processing plants in Maine and Massachusetts could lose about \$6.9 million 1980. Over half of this reduction is associated with reduced redfish output, while one-third is associated with reduced haddock landings by U.S. vessels from the Canadian zone. About 112 full-time processing jobs would be lost. This loss would also involve many more part-time or seasonal jobs, an important source of supplementary income to those in coastal areas. If such reductions in the processing sector were mitigated by imports of

whole fresh fish, the U.S. balance of payments deficit in fisheries would increase commensurately.

The fishery resources agreement and the agreement to arbitrate the maritime boundary are expressly linked; neither can enter into force without the other. Thus, if the proposed action is not implemented, current arrangements between the United States and Canada to submit the maritime boundary issue to binding dispute settlement would lapse by their terms. Should this occur, Canadian fishermen presumably will have access indefinitely to a significant portion of Georges Bank claimed by the United States. Traditionally, about 95 percent of Canadian catches on Georges Bank have been taken in the disputed zone. With the exception of Loligo squid, all species for which Canada has an entitlement under the proposed action are available to Canadian fishermen in potentially greater amounts either in the Canadian zone or in the area of overlapping boundary claims.

Thus, in the absence of a fishery agreement, Canadian fishermen would be able to continue their traditional fisheries largely unaffected by denial of access to the undisputed U.S. zone. Also, they would be under no obligation to observe any restraints contained in U.S. management plans to rebuild depleted stocks or to assure

long term resource productivity. The New England and Mid-Atlantic Fishery Management Councils would thus continue in the difficult situation they currently face, imposing restraints on U.S. fishermen while having no control over Canadian fishermen fishing the same stocks.

The second category of consequences flowing from the "no agreement" alternative includes the continuation and possible increase of current risks to the environment. As mentioned with respect to groundfish on Georges Bank, disagreement over appropriate national shares of the annual harvests for shared stocks is likely to lead to exploitation rates higher than either country individually would recommend. Depending on the level of exploitation and the length of time involved, stock abundance can be sharply reduced. History demonstrates that depletion of stocks in great demand has been the rule rather than the exception from the North Sea to Georges Bank where two or more countries have access to fishery resources in common without an effective agreement on how such resources are to be shared and managed.

Many shared stocks, particularly scallops, cod, haddock, and pollock, at present are subject to significant risks of depletion. For example, the annual average harvest of scallops from Georges Bank (Subdivision 5Ze)

that may be sustainable over the long term has been estimated at 10,000 tons. In 1977 and 1978, U.S. and Canadian harvests from this area totaled over 17,500 tons. In the absence of a fishery agreement limiting total harvests, both sides are free to attempt to outfish each other in this area. Although either may thus gain a temporary advantage over the other, catches at 1977 and 1978 levels, if sustained, ultimately will reduce stock abundance. Over time, each side could find itself competing for a larger slice of a smaller pie to a point, perhaps, where fishing becomes uneconomical.

In contrast to this open-ended situation and its potential for severe economic dislocation among those dependent on the fisheries, the proposed action will enable both countries to achieve a measure of stability for their fishing communities. Investments in fishing and processing are thus likely to be protected and encouraged.

A final example of these risks to the environment in the absence of an effective fishery agreement is that of haddock. In 1964, recent trends in the fishery indicated that the haddock resource included strong year-classes, that stock abundance was rising, and that prospects for the future were relatively good. In this situation in 1965 and 1966, the Soviet Union greatly increased fishing pressure on haddock and captured a major share of the landings.

Subsequently, the haddock stock and fishery collapsed. Where U.S. fishermen landed about 46,500 tons annually from 1935-1960, their landings fell to only 3,018 tons in 1973, a decline of 94 percent from the U.S. catch of 51,895 tons in 1964. No year-classes of any consequence were produced during the decade between 1964 and 1974.

Although the haddock resource has since recovered to a point that can be termed hopeful, the United States and Canada are also at a point where, through competitive fishing, haddock productivity again could decline.

For these reasons, the "no agreement" alternative holds few attractions and may exacerbate existing problems.

2. Settlement of the Maritime Boundary, Only

Establishing a maritime boundary without an Agreement would mean that, instead of competing for a given stock in the boundary region on Bank Bank, both countries could continue to fish competitively for that stock within their areas of exclusive jurisdiction. The management and resource sharing problems discussed regarding the "No Agreement" alternative would be unresolved, since management jurisdiction over the stocks would be divided. The Agreement, on the other hand, gives the United States primary or joint management responsibility for all finfish on Georges Bank except argentine, no matter where the boundary is delimited.

Only if the U.S. position prevailed completely would the U.S. retain most of the Georges Bank stocks. Even so, such important stocks as mackerel, pollock, and herring would continue to range across the boundary into the Canadian undisputed zone.

Any boundary outcome short of the full U.S. claim would divide almost all the stocks on Georges Bank, including those of the Northeast Peak, the most productive portion of the Bank, particularly for scallps. Such an outcome could also intensify competitive fishing pressure on the stocks if either countr, or both, concluded that the nature of the boundary settlement entitled it to increase its share of the harvest.

Under the agreement, even if the Canadian boundary claim should fully prevail, U.S. fishermen are protected. In the first ten years the United States could lose no more than ten percent of its entitlement share for those stocks for which it has a 50 percent or greater initial entitlement, or five percent of those for which it has less than a 50 percent initial entitlement. Even if redetermination of entitlement took place each ten years, which is allowed but not required, under the Agreement, if the Canadian claim should prevail in its entirety, the U.S. could lose all of its claim to the resources in the disputed zone, including the valuable Northeast Peak stocks.

3. Negotiate a Resource Agreement Subsequent to  
Delimitation of a Maritime Boundary

This alternative could involve accepting for a period of several years, while the boundary was determined presumably through arbitration, the status quo of no resource

agreement. During such period, there would be the attendant risks to resources noted in the discussion of Alternative 1 above.

Once a boundary was determined, it would eliminate the present area of overlapping jurisdictional claims and define the physical areas over which each party exercises jurisdiction. Such developments would obviously be taken into consideration by the United States and Canada in resource negotiations undertaken subsequent to the boundary delimitation.

If the United States position were fully upheld in the boundary adjudication, the United States would be under no obligation to allow Canada access to Georges Bank and would be able to manage unilaterally the stocks that do not range beyond Georges Bank or other Gulf of Maine areas under the exclusive fisheries jurisdiction of the United States. (As indicated in the discussion of Alternative 2 above, some fishery stocks, however, would range across a boundary entirely consistent with the U.S. boundary claim, and continue to require coordinated management by the United States and Canada.)

On the other hand, if the Canadian position on the boundary should prevail, Canada could bar U.S. fishermen from the



northeastern third of Georges Bank, an extremely important area for scallops, haddock, cod, yellowtail flounder, and many other species. Moreover, since almost all of the stocks on Georges Bank would be transboundary in nature, the cooperation of Canada in managing these stocks would be essential if overfishing were to be avoided. If Canada established undisputed jurisdiction over an important part of the range of these Georges Bank stocks, it is only reasonable to anticipate that Canada would insist that any cooperative management arrangement for these stocks be truly a joint exercise of the two governments. This would mean that each country would have an equal voice in managing the Georges Bank Stocks. In contrast, the framework set forth in the proposed action provides the United States primary management responsibility for the great majority of Georges Bank stocks (see Section II).

A similar need for joint management of Georges Bank stocks could also result if a boundary were to fall somewhere between the claims of the two countries such that Canada secured exclusive fisheries jurisdiction over a significant part of the northeastern third of Georges Bank.

A boundary running somewhere between the boundary claims of the two countries and establishing some part of

Georges Bank as a zone of exclusive fisheries jurisdiction and access for each country could also intensify competitive fishing pressures on Georges Bank stocks. It is likely that each country in its limited zone of exclusive access would strive to harvest a share of the catch from Georges Bank stocks approximating at least what it had taken when a larger but shared area of Georges Bank had been available for fishing. In other words, each country at a minimum would strive to prevent disruption of its traditional fishing activities, even if this led to more intensive fishing in a more restricted area. In addition, either country or both might conclude that the nature of the boundary settlement entitled it to an increased share of the harvest of particular stocks.

The result could easily be total catches in excess of what either country individually would recommend, producing threats to resource stability as well as complicating future efforts to determine how resources available for both countries should be shared and managed after the boundary delimitation.

The risk of such developments if the fishing areas of Georges Bank are divided between the two countries arises because:

(1) the section of Georges Bank which could become a Canadian exclusive fisheries zone of Canada's boundary position prevailed, i.e., some part of the northeastern area of Georges Bank, is an exceptionally productive fishing ground. U.S. and Canadian combined catches during 1965-1976, from roughly the northeastern third of Georges Bank, produced approximately 46 percent of the Subarea 5 haddock catch, 43 percent of the Division 5Z cod catch, 33 percent of the Georges Bank yellowtail flounder catch, and 79 percent of the Georges Bank scallop catch taken by the combined fleets of the two countries. The northeastern edge of Georges Bank has been the most reliable area of good scallop recruitment, and is currently the only part of the Bank with good scallop recruitment;

(2) historical data substantially understate harvesting possibilities if fishing effort is intensified. For example Canadian vessels alone, primarily as a result of a period of intensified fishing for haddock on the northeastern part of Georges Bank during the Fall of 1978, took 39 percent of the total Subarea 5 haddock catch of the two countries.

Thus, there could be exacerbated risks of overfishing of major fishery stocks that are currently fully exploited, if there were any significant division of Georges Bank into zones of exclusive fisheries jurisdiction for the United States and Canada. In such a situation, the combined efforts of the fishing vessels of the two countries in the respective fisheries zones of the two countries could produce combined total catches that could compromise the long-term productivity of the stocks.

Pressures in the two countries to maintain established fisheries, set against conflicting pressures to capitalize on any apparent advantage flowing from a boundary settlement dividing Georges Bank in some manner into exclusive fishing zones for the two countries, might make it difficult either to (1) conclude a fisheries agreement promptly after such a boundary settlement, or (2) in the absence of some agreement with Canada, to maintain the restraint necessary to assure the long-term stability of shared and fully exploited stocks.

In summary, there are very substantial risks to the protection and preservation of the fishery stocks associated with this alternative, particularly if the U.S. boundary position were not fully upheld and if there were no mechanism in place to prevent competitive overfishing.

4. Negotiate a Less Comprehensive Resource Agreement  
Pending Delimitation of a Maritime Boundary

Since this alternative addresses only the situation prior to delimitation of a maritime boundary, the discussion above under Alternative 3 regarding the resource situation after a boundary delimitation would also be applicable in connection with the long-term implications of this shorter-term alternative.

Obviously any approach has merit that can help address even in the short term the growing risk to long-term productivity of resources posed by the strong pressures to maximize current fishing opportunities for those fisheries stocks now shared by both countries.

There are, however, certain difficulties with and disadvantages of this alternative which relate to how effective and reliable such an interim approach might be.

To some extent both countries have resorted to this alternative in the past as witnessed by the 1977 Reciprocal Fisheries Agreement and the aborted 1978 continuation of that Agreement. The bilateral understandings contained in those Agreements provided a certain degree of restraint as both countries sought to conclude long-term arrangements. These understandings ceased to apply after June 1978 when

the countries failed to implement the 1978 Agreement. Thus, even if an interim approach could be negotiated, past experience raises questions whether it could be maintained during the several years that would probably be needed at a minimum to resolve the boundary issue.

Another difficulty is that stocks most immediately threatened with intense fishing pressure for the most part are those fully exploited by both countries, and the fishermen of both countries thus have substantial economic interests at stake. An interim agreement providing effective conservation of these stocks would require mutual self-restraint in the present in order to maintain longer term resource productivity and fishing opportunities in the future. The acceptance of such restraint in the present may become difficult, however, when neither country or its fishermen under an interim agreement could have assurance that a new agreement developed after the boundary delimitation would allow them to share in future opportunities in a manner commensurate with the restraint each side exercised during the interim period. Thus, any interim agreement would probably tend to impose only limited restrictions on the emerging trend to maximize current fishing opportunities at the expense of potential future

opportunities. Such an approach over the period of years that would be required at best to resolve the boundary question poses significant risks to potential future opportunities. Thus, a limited approach could delay the genesis of new and effective procedures for rational management of shared resources.

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