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Comparison of Fishery Policies and Management Techniques of the United States and Iceland

Ted I. Lillestolen

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Abstract

In 1976, the United States enacted the Fishery Conservation and Management Act (FCMA), presently referred to as the Magnuson Fishery Conservation and Management Act (MFCMA). The legislation is a complex and detailed document establishing for the first time a national fishery policy. The Act also created an organizational structure designed to implement this new policy. The main component within the organizational structure is eight Regional Councils, each consisting of individuals from federal and state governments, and the fishing industry. The jurisdictional control of all the Councils encompasses the entire Fishery Conservation Zone (FCZ), also established under the MFCMA. The primary responsibility of each Council is to prepare fishery management plans (FMP) for the various fisheries within their region. The plans are designed to prevent over-exploitation of the fisheries resources and to ensure their optimal utilization.

Since the Act's implementation, there has been a great deal of controversy, especially generated by the commercial fishermen. Although no one seems to dispute the overall goals established in the MFCMA, the dispute does center on how those goals are to be achieved. In particular, the criticism primarily focuses on the Regional Council's establishment of ineffective and inefficient management plans. A method of assessing the validity of this criticism would be to conduct a comparative study with the fishery management policy of another country. This paper focuses on Iceland, primarily because of its great economic dependency on its fisheries resources, unlike the United States. In order to maintain a stable economy, this small country must ensure that its fisheries management practices are effective and result in the continued health of the fish stocks within its jurisdiction.

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Introduction

The Fishery Conservation and Management Act (FCMA) of 1976 (PL-94-265), presently referred to as the Magnuson Fishery Conservation and Management Act (MFCMA), was implemented on March 1, 1977. The legislation unilaterally extended the United States fisheries jurisdiction out to 200 nautical miles (NM). Within the special purpose zone, designated as the Fishery Conservation Zone (FCZ)[1], the MFCMA prohibits the unauthorized fishing by foreign fishing vessels. The MFCMA also established a fishery policy requiring the federal government to undertake an active role in managing the fisheries resources within the FCZ to ensure that over-exploitation does not occur. The established fishery policy was the first such policy established by the federal government to manage the fisheries resources off the coast of the United States (U.S.)[2]. The public's reaction to the MFCMA was at first most favorable, when the provision creating the FCZ was emphasized and well publicized. To the U.S. fishermen, the FCZ was perceived of as a legal means of excluding foreign fishing vessels from the U.S. Continental Shelf waters. However, the reaction immediately changed when it was realized the federal government was going to undertake an active fisheries management role that would not only have an impact on foreign fishermen but on domestic fishermen as well.

The United States is not unique in having an established 200 NM FCZ. As seen in Table 1, 24 other nations have established 200 NM FCZ's and 56 nations have extended their boundaries establishing a 200 NM Exclusive Economic Zone (EEZ) or Territorial Sea. Many of these nations have also established their own fishery policy, which to varying degrees are designed to prevent overfishing. Iceland, in particular, has been actively managing its fisheries since the early 1970's[3] after its herring stocks were heavily affected by overfishing[4]. In 1972, Iceland had extended its fisheries jurisdiction from 12 NM to 50 NM[5] and again extended its FCZ out to 200 NM in 1975[6]. The primary purpose for such a jurisdictional extension was to eliminate foreign fishing in coastal waters and to give the government exclusive control over the fisheries resources in order to prevent overfishing of existing stocks. In 1973, Iceland enacted its first legislation establishing the country's fishery policy[7]. The legislation, revised in 1976[8], is similar to the U.S. MFCMA with regard to the impact the fisheries management has on both the foreign and domestic fishermen. Although the U.S. and Icelandic fishery policies both impact domestic fishermen, it does appear this impact is less dramatic in Iceland. The purpose of this paper will be, through analysis of fishery policy and management techniques utilized by each respec-

tive country, to determine whether options exist to improve the U.S.'s effort in managing its fisheries.

Table 1

Zones of Fisheries Jurisdiction

nations claiming extended jurisdiction (15 July 1979) and year of entry into force

200 miles

Exclusive Economic Zones

Bangladesh	1978
Barbados	1979
Burma	1977
Cape Verde	1978
Colombia	1978
Comoro Islands	1976
Costa Rica	1972
Patrimonial Sea	
Cuba	1977
Dominican Republic	1977
Fiji*	
France (except Mediterranean)	1977
Grenada	1978
Guatemala	1976
Guinea-Bissau	1978
Haiti	1977
India	1977
Ivory Coast	1977
Kampuchea	1977
Kenya	1979
Korea (Republic of)	1977
Maldives	1976
Mauritania	1978
Mauritius	1977
Mexico	1976
Mozambique	1976
New Zealand	1978
Nigeria	1978
Norway	1977
Pakistan	1976
Papua New Guinea	1978
Offshore waters	
Portugal	1977
Sao Tome and Principe	1978
Seychelles	1977
Solomon Islands	1978
Spain	1978
Sri Lanka	1977
Surinam	1978
Togo	1972
Venezuela	1978
Viet Nam	1977
Western Samoa*	
Yemen (People's Democratic Republic of)	1978

Exclusive Fishing Zones

Angola	1975
Australia*	
The Bahamas	1977
Canada	1977
Chile	1952
Denmark	1977
Gambia	1978
Germany (Federal Republic of)	1977
Guyana	1977
Iceland	1975
Ireland	1977
Japan	1977
Kiribati	1978
Korea (Republic of)	1954
Netherlands	1977
Nicaragua	1977
Oman	1977
Senegal	1976
South Africa	1977

*Legislation enacted, entry into force pending

Table 1 continued

Zones of Fisheries Jurisdiction

nations claiming extended jurisdiction (15 July 1979) and year of entry into force

200 miles			
Exclusive Fishing Zones continued		Ecuador	1966
		El Salvador	1950
		Ghana	1977
Sweden	1978	Guinea	1965
Tuvalu	1978	Liberia	1976
UK	1977	Panama	1967
USA	1977	Peru	1947
USSR	1976	Sovereignty and jurisdiction over the sea, its soil and subsoil	
Territorial Sea		Sierra Leone	1971
Argentina	1967	Somali Democratic Republic	1972
Benin	1976	Uruguay	1969
Brazil	1970		
Congo (People's Republic of)	1977		

Source: FAO, World Fisheries and the Law of the Sea, 1979, Table 4, page 20.

Background

Fundamental differences exist between the United States and Iceland that must be addressed before a comparative study can be made of the fishery policies of the two countries. These differences include the size of the area in which fisheries are managed, the size of the catches, and the economic impact fisheries has on the economy of each respective country. Table 2 lists these statistics for the years ending in 1979 and 1980. As seen in the table, Iceland's FCZ is relatively smaller, constituting approximately two-hundredths the size of the U.S. FCZ. The U.S. FCZ is estimated to encompass an area where approximately 15-20% of the world's marine fisheries resources are harvested[9]. Comparing the amount of fish harvested, Iceland's total landings are also much smaller than the total landings for the U.S. In 1980, Iceland's total catch was approximately one-half the total U.S. catch: However, in terms of economic dependence on the fisheries, it is Iceland that heavily depends on this resource. Iceland's fisheries constitute approximately 75% of the country's total exports. The U.S. fisheries only constitutes .8% of the country's total exports. It is Iceland's dependence on the fisheries resources that makes it an appropriate choice to conduct a comparative study. Iceland is in a position that requires a good

Table 2

	United States		Iceland	
Size of FCZ	2 mill. sq. mi.[1]		44,400 sq. mi.[2] (111,000 km.2)	
	1979	1980	1979	1980
Total Quantity of Fisheries Landed ('000 tonnes)	2843.5[4]	2941.0[4]	1645.0[4]	1512.1[4]
Value (U.S. mill. $)	2233.7[4]	2237.2[4]	325.3[4]	372.7[4]
Total Exports (mill. $)	119,900[3]	-	767.1[5]	-
Imports	102,300[3]	-	802.4[5]	-
Total Fisheries Exports and Fish Products (mill. $)	1082[4]	1006[4]	599[4]	697[4]
Imports	3811[4]	3648[4]	0[4]	0[4]
Total Foreign Catch ('000 tonnes)	1600[6]	-	187.2[7]	182.8[7]

Source[1]: Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, U.S. Dept. of Commerce, NOAA, NMFS, Washington, D.C., March 1981, p. 6.

Source[2]: Mar Elisson, Director of Fisheries, "Conservation and Management," Iceland 1981 Fisheries Yearbook, (Iceland Review, 1981), p. 9. (to convert km.2 to mi.2 multiply by .4)

Source[3]: International Yearbook and Statesmens Who's Who/ 1981, research by Marvyn O. Pragnell (Kelly's Directories Limited, 1981), p. 568.

Table 2 continued

Source[4]: Review of Fisheries in OECD Member Countries/1980, (Organization for Economic Co-operation and Development), pp. 26, 27.

Source[5]: The Statesman's Yearbook/1980-1981, ed. John Paxton (St. Martins Press, New York, 1980), p. 597. (1 dollar U.S.=363.49 Kroner, 1979)

Source[6]: Gerald D. Hill, Jr., "Fishermen Enter 4th Year of Conservation," NOAA Magazine, vol. 10, no. 3 (May/June 1980), p. 2.

Source[7]: Iceland 1981 Fisheries Yearbook, (Iceland Review, 1981), p. 51.

fishery policy and implementation of effective management techniques in order to maintain a stable economy. Unlike the United States, Iceland cannot afford to allow overfishing of its existing stocks that are under its jurisdictional control.

The primary reason for the United States and Iceland to extend their fisheries jurisdiction, as previously stated, was to reduce, if not eliminate foreign fishing in waters contiguous to each country. The impact of foreign fishing in the U.S. and Icelandic waters was quite significant in the early 1970's. In the U.S., for example, only 10% of the fish harvested on Georges Banks in 1972 was landed by domestic fishermen[10]. 1976 statistics also show that a certain size of the herring stock found on Georges Banks, considered to be a highly productive area, had declined by 85%[11]. In Iceland, prior to 1972, approximately 50% of its fisheries were harvested by foreign fishing vessels[12].

When extended FCZ's were established by both countries, measures were taken to ensure that those stocks considered to be overfished, were given an opportunity to replenish. In general, the management techniques utilized depended on the condition of the particular stock. The objectives of the particular management tech-

nique also depended on whether the manager desired to focus on controlling the composition of a fish stock or controlling the total amount of fish caught. Some of the management techniques that are currently being utilized by the U.S. and/or Iceland are, 1) quotas, 2) area and seasonal closures, 3) gear restrictions, 4) mesh size regulations, 5) fish size limits, and 6) limited entry.

Quotas The quota system is designed to directly control the mortality of a particular fish stock by strictly limiting the amount of fish landed. The objective is to control the total population of a particular fisheries[13]. Various types of quota regulations exist, including trip quotas, seasonal quotas, and vessel quotas[14]. Trip quotas relate to the amount of fish a vessel can harvest each time the vessel goes out to fish. Seasonal quotas relate to the amount of fish a vessel can harvest during certain periods of the year, and vessel quotas relate to the total amount of fish a vessel can harvest during an established time period. The impact on the fish population is direct and the impact on both the small (young) and large (older) fish is equal. The fishermen who must fish under a quota system are also directly impacted. In limiting the number of fish that can be harvested directly limits the income of the fishermen[15]. Quotas also have an effect of reducing compe-

tition among fishermen. Very successful fishermen may end up with the same total catch as less successful or less ambitious fishermen. In terms of management, the quota system is an effective method of directly relieving the pressure on a fish stock. The results can be noticed within a few years, and the enforcement of the quota system is not difficult if the manpower is available. It should be noted that in order for the quota system to be effective, accurate biological data is required[16].

Area and Seasonal Closures Area and seasonal closures are designed to limit or prohibit fishing within a certain area permanently or temporarily. The objective is primarily directed at controlling the composition of a particular fisheries[17]. The technique is used for various reasons, such as protecting a known spawning or nursing area[18], or protecting a fish stock which is known to be highly associated with other fish stocks and thus constitutes a large portion of a total catch (by-catch)[19]. Area closures are also used as a method of dealing with gear conflicts. Gear conflicts arise when more than one fishing technique is used in the same area to catch the same or different fish stocks. The various fishing techniques commonly involved in the conflict include bottom trawling, long lining, gill nets, and seining.

The long term impact on the fisheries is not direct because outside the controlled area, if no other restrictions are used, the amount of fish that can be landed is not limited. To the fishermen, the impact at first may be direct if the concentration of a fish stock outside the closed area is low. However, on the long term the concentration should increase through the protection of spawning and nursing areas. Area and seasonal closures also do not eliminate competition among fishermen since total catches outside the designated areas are not limited. The fishermen who exert more effort to catch more fish will acquire a larger income. From a management standpoint, area and seasonal closures are an effective short term method of relieving direct pressure on a fish stock and an effective long term method of ensuring the continual propagation and early growth of a fish stock. Area and seasonal closures are easy to enforce if the manpower is available[20] and the biological data required to implement this technique does not have to be as extensive as that for quotas.

Gear Restrictions Gear restrictions are primarily designed to reduce the amount of fish harvested by prohibiting the use of fishing gear that is highly efficient. The objective of this technique is to indirectly control the total population of a particular fish stock[21]. Re-

quiring the use of less efficient fishing techniques results in the escape of more fish and a decrease in the total amount of fish harvested. Gear restrictions are also used in controlling the composition of a fish stock. An example is mesh size regulations, described below. The impact on the fishermen may on the short term be direct if new gear must be purchased, but if the regulations do not change, the costs on the long term will not be great. This technique does not eliminate competition among fishermen due to the fact that the total amount of fish harvested is not restricted and those fishermen who exert greater effort to catch more fish will receive a greater income. From a management standpoint, gear restrictions are an effective long term method of reducing pressure on a fish stock if the number of fishermen remains relatively constant. The enforcement of gear restrictions is not difficult if the manpower is available. The biological data required to implement gear restrictions is not as extensive as that required for quotas[22].

Mesh Size Regulations As mentioned above, the mesh size regulation is a form of gear restriction. The objective of this technique is specifically designed to control the composition of a particular fish stock. The mesh size directly correlates to the minimun size of a particular fish stock that is to be harvested. The size of

a fish directly relates to the age of that fish. Mesh size regulations are the most common technique used to reduce the amount of younger fish harvested[23]. The impact on the fishermen, like gear restrictions, is initially direct if new nets must be purchased. However, on the long term, the costs are minor if the regulations remain the same. This technique does not restrict the quantity of older fish harvested and therefore does not hamper competition among individual fishermen. Those fishermen who exert greater effort will acquire a greater income. The enforcement of this technique is not difficult if the manpower is available, and accurate biological data is not required for this technique to be effective[24].

Fish Size Limits Fish size limits, as with mesh size regulations, are designed to limit the harvesting of young fish of a particular stock. The objective of this technique is specifically designed to control the composition of a particular fish stock[25]. Size limits are primarily used in the management of shellfish, such as clams, crabs, or lobsters. This technique, however, is also used for certain fisheries where there is great concern to limit the harvesting of young fish. Without the use of other management techniques, fish size limits are not very effective if used for fisheries other than shellfish[26]. This is due to the large percentage of small fish caught in a trawl or

on a long line not surviving if thrown back into the water. If the personnel is available the enforcement of this technique is not too difficult. As with mesh size regulations, accurate biological data is not required to implement this technique[27].

Limited Entry Limited entry is a management technique designed to control the total population of a particular fish stock[28]. This is done by limiting or controlling the number of fishermen allowed to fish for a certain stock and may be limited within a certain area. With this control the manager can directly regulate the amount of fish harvested if the technology used by the fishermen remains the same[29]. The enforcement of this system is not difficult because the manager knows exactly who is allowed to fish. The biological data required to implement this management technique must be quite accurate[30]. The impact on the fishermen depends on whether the fishermen are allowed to enter the fisheries or not. If he is allowed to enter the fisheries the impact is beneficial due to the elimination of competition and the result will be a higher income. However, to the fishermen who are not allowed to enter the fisheries the impact is definitely negative.

United States Fishery Policy and Management Techniques

The MFCMA of 1976 is an extensive document that establishes the U.S.'s exclusive jurisdiction over the fisheries resources within 200 NM[31]. In addition to this claim, the Act also established a fishery policy that commits the federal government to actively manage the fisheries to ensure that overfishing does not occur. The MFCMA marked a considerable shift in U.S. fishery policy. Prior to 1977, the U.S. policy on managing fisheries, beyond an existing 12 NM FCZ[32], was through international conventions. Two such conventions were the Northwest Atlantic Fisheries Convention (1949) and the North Pacific High Seas Fisheries Convention (1952)[33]. These conventions were ineffective in reducing the increased harvesting pressure on the fish stocks caused by foreign fishing. In 1966, the U.S. did establish a 12 NM FCZ which was designed to strictly eliminate foreign fishing[34]. This action, however, was ineffective because a number of large fishing grounds were located beyond 12 NMs, such as Georges Banks. As a result of increased pressures from domestic fishermen, the New England fishermen in particular, Congress enacted the MFCMA.

The MFCMA consists of four titles which include: Title I - Fishery Management Authority of the United States,

Title II - Foreign Fishing and International Fishery Agreements, Title III - National Fishery Management Programs, and Title IV - Miscellaneous Provisions.

Title I - Fishery Management Authority of the United States Title I establishes the boundary of the 200 NM FCZ[35] and establishes U.S. authority to be the exclusive fishery manager within the FCZ[36]. The section also establishes U.S. claim over anadromous species in the high seas[37], the Continental Shelf fisheries[38], but specifically excludes claim over highly migratory species[39].

Title II - Foreign Fishing and International Fishery Agreements Title II establishes the mechanism foreign nations must comply with in order to fish within the U.S. FCZ. Although the MFCMA establishes exclusive jurisdiction over the fisheries within the FCZ, the U.S. policy has been to allow foreign fishing vessels access to any surplus of fisheries that exist.

Before any foreign nation can be allowed to fish within the FCZ, a Governing International Fisheries Agreement (GIFA) must be signed[40]. The GIFA contains the provisions stipulating the foreign nation's recognition of the U.S.'s exclusive fishery management authority of the FCZ. The GIFA also obligates the foreign nation to comply with

all rules and regulations that apply to the MFCMA and any rules established in conjunction with applicable fishery management plans (FMP) or preliminary management plans (PMP). FMP's are plans prepared by Regional Councils, as discussed under Title III, and PMP's are fishery plans prepared by the Secretary of Commerce if FMP's are not yet in existence[41].

Once a GIFA has been signed the next phase requires the foreign nation to apply for a permit for each vessel wishing to fish within the FCZ. The permit process takes place yearly and specifies the amount of a particular fish stock that can be harvested. The U.S. reserves the right to revoke or revise authorized allocations at any time. A permit fee is paid by each foreign vessel fishing within the FCZ, and in 1980 the U.S. collected an estimated 18 million dollars[42].

Since the enactment of the MFCMA, the amount of fish harvested by foreign fishing vessels within the FCZ has decreased by one-third. In 1976, prior to the MFCMA, the total foreign catch was 2.6 million metric tons (MMT). Since the enactment of the MFCMA the average total foreign catch between 1977 and 1979 was 1.7 MMT[43].

Title III - National Fishery Management Programs Title

III establishes the organizational structure designed to manage the fisheries resources and establishes the guidelines that must be followed in preparing FMP'S.

The overall authority of the fisheries resources within the FCZ lies with the Secretary of Commerce[44], who has delegated certain responsibilities to the Assistant Administrator of the National Marine Fisheries Service (NMFS), a component of the National Oceanic and Atmospheric Administration (NOAA). Under NMFS, Title III established eight Regional Councils corresponding to eight regions that make up the FCZ. The eight Regional Councils are: the New England Council, Mid-Atlantic Council, South Atlantic Council, Caribbean Council, Gulf Council, Pacific Council, North Pacific Council, and Western Pacific Council. Each Council consists of members from the federal government, state government, and the fishing industry who are familiar with the fisheries within each particular region[45]. The resulting organizational structure allows for a consistent national policy and provides for a mechanism in which the public and private sector, who are familiar with the fisheries within a region, to have input in formulating management plans.

Regional Councils are given the responsibility of preparing the FMP's for each fisheries within their respective

region. The contents of the FMP's are specifically laid out in this title and include: 1) Measures necessary to conserve and manage the fisheries, applicable to both foreign and domestic fishing, 2) Description of the fishery including, "but not limited to, the number of vessels involved, the type and quality of fishing gear used, the species of fish involved and their location, the cost likely to be incurred in management, actual and potential revenues from the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any," 3) Assessment and specification of the present and future condition of the fishery and its Maximum Sustainable Yield (MSY) and Optimum Yield (OY), 4) Assessment and specification of amount of the OY domestic fishermen can take and the amount, if any, can be allocated to foreign fishing vessels, and 5) Specification of the data with respect to the fishery, regarding fishing gear used, the total catch of that particular species, areas that fishing took place, and number of hauls[46].

Title III also established seven national standards for fishery conservation and management that must be complied with when preparing FMP's. The seven national standards are: 1) Prevention of overfishing and achieving an optimum yield for each fisheries, 2) To utilize, if at all practicable, conservation and management measures that can be applied to

a stock of fish throughout its range, 3) To ensure the conservation and management measures are based on the best available scientific data, 4) To ensure management practices are non-discriminatory among U.S. citizens, 5) To promote, where practicable, efficient mechanisms to utilize the fisheries, 6) To take into consideration the "variations among, and contingencies in fisheries, fishery resources, and catches," and 7) To ensure the conservation and management measures, where practicable, "minimize costs and avoid unnecessary duplication."[47]

Title III also contains a provision which deals with those fisheries existing within 3 NM of the coast. This area is designated as the Territorial Sea and the authority over those fisheries lies with each individual coastal state[48]. However, the Secretary does have the power to take action within 3 NM if, "the fishing in a fishery, which is covered by a fishery management plan implemented under this Act, is engaged in predominately within the fishery conservation zone and beyond such zones," and "any State has taken any action, or omitted to take any action, the results of which will substantially and adversely affect the carrying out of such fishery management plan."[49] If the Secretary of Commerce does take such action within 3 NM, strong justification is required.

Title IV - Miscellaneous Provisions Title IV can be considered a catch-all title. The section is designed to allow the incorporation of existing legislation dealing with fisheries to the MFCMA. One of the more important attached laws is the Fishermens Protection Act of 1967. Title IV also includes a statement stipulating that the MFCMA will comply with a Law of the Sea Treaty if and when the U.S. becomes a party to the Convention[50].

Fisheries Management Techniques Since the implementation of the MFCMA, twelve FMP's have been prepared by the Regional Councils and approved by the Secretary of Commerce. In addition to the FMP's, eight PMP's have been prepared and implemented by the Secretary of Commerce. The management techniques utilized in the plans include those allowable under Title III (Section 303b) of the Act. The techniques include: 1) Licensing, 2) Area and Seasonal Closures, 3) Quotas, 4) Size or Sex Restrictions, 5) Gear Restrictions, and 6) Limited Entry. Table 3 lists the management techniques utilized for each FMP and PMP. It should be emphasized that FMP'S apply to both domestic and foreign fishing vessels, whereas PMP's only apply to foreign fishing vessels.

Table 3

United States Management Measures in Effect

FMP's	Foreign Quotas	Domestic Quotas	Provisions for Inseason Adjustments and Closures
Atlantic Groundfish	-	Y	Y
Atlantic Herring	-	Y	Y
Butterfish	Y	Y	Y
Atlantic Mackerel	Y	Y	Y
Atlantic Squids	Y	Y	Y
Surf Clams and Ocean Quahogs	-	Y	Y
Stone Crab	-	Y	Y
Commercial and Recreational Salmon	-	Y	Y
Northern Anchovy	-	Y	Y
Gulf of Alaska Groundfish	Y	Y	Y
Tanner Crab	Y	Y	Y
High Seas Salmon	-	Y	Y
PMP's			
Atlantic Hakes	Y	-	Y
Other Finfish of the N.W. Atlantic	Y	-	Y
Atlantic Billfish and Sharks	Y	-	Y
WOC Trawl	Y	-	Y
Seamount Groundfish	Y	-	Y
Pacific Billfishes and Sharks	Y	-	Y
Bering Sea Snails	Y	-	Y
Trawl and Herring Gillnet Fishery	Y	-	Y

Code: Y=Yes D=Domestic F=Foreign T=Time G=Gear

Table 3 continued

United States Management Measures in Effect

FMP's	Discard Prohibition	Vessel Identification	Catch Limitations By Species
Atlantic Groundfish	Y	Y	Y
Atlantic Herring	Y	Y	Y
Butterfish	-	Y	Y
Atlantic Mackerel	-	Y	Y
Atlantic Squids	-	Y	Y
Surf Clams and Ocean Quahogs	-	Y	Y
Stone Crab	-	Y	Y
Commercial and Recreational Salmon	-	-	Y
Northern Anchovy	-	-	Y
Gulf of Alaska Groundfish	-	Y/F	Y
Tanner Crab	-	Y/F	Y
High Seas Salmon	-	-	Y
PMP's			
Atlantic Hakes	-	Y	Y
Other Finfish of the N.W. Atlantic	-	Y	Y
Atlantic Billfish and Sharks	-	Y	Y
WOC Trawl	-	Y	Y
Seamount Groundfish	-	Y	Y
Pacific Billfishes and Sharks	-	Y	Y
Bering Sea Snails	-	Y	Y
Trawl and Herring Gillnet Fishery	-	Y	Y

Code: Y=Yes D=Domestic F=Foreign T=Time G=Gear

Table 3 continued

United States Management Measures in Effect

FMP's	Provisions for Incidental Catch	Provisions for Closed Seasons	Effort Restrictions
Atlantic Groundfish	Y	-	G
Atlantic Herring	Y	Y/D	-
Butterfish	Y	Y/F	F/T/G
Atlantic Mackerel	Y	Y/F	F/T/G
Atlantic Squids	Y	Y/F	F/T/G
Surf Clams and Ocean Quahogs	-	-	T
Stone Crab	-	Y/D	G
Commercial and Recreational Salmon	-	Y/D	T/G
Northern Anchovy	-	Y/D	T/G
Gulf of Alaska Groundfish	Y	Y/F	T/G
Tanner Crab	Y	Y/F,D	T/G
High Seas Salmon	Y	Y/D	T/G
PMP's			
Atlantic Hakes	Y	Y/F	T/G
Other Finfish of the N.W. Atlantic	Y	Y/F	T/G
Atlantic Billfish and Sharks	Y	-	T
WOC Trawl	Y	Y/F	T/G
Seamount Groundfish	Y	Y/F	-
Pacific Billfishes and Sharks	-	-	-
Bering Sea Snails	Y	-	G
Trawl and Herring Gillnet Fishery	Y	-	-

Code: Y=Yes D=Domestic F=Foreign T=Time G=Gear

Table 3 continued

United States Management Measures in Effect

FMP's	Landing Restrictions	Area Restrictions	Fixed Gear Avoidance
Atlantic Groundfish	Y	Y	-
Atlantic Herring	-	-	-
Butterfish	-	Y/F	Y/F
Atlantic Mackerel	-	Y/F	Y/F
Atlantic Squids	-	Y/F	Y/F
Surf Clams and Ocean Quahogs	-	Y	-
Stone Crab	Y	Y	Y
Commercial and Recreational Salmon	Y	Y	-
Northern Anchovy	Y	Y	-
Gulf of Alaska Groundfish	Y/D	Y/F	Y
Tanner Crab	Y/D	Y/F	-
High Seas Salmon	Y	Y	-
PMP's			
Atlantic Hakes	-	Y	Y
Other Finfish of the N.W. Atlantic	-	Y	Y
Atlantic Billfish and Sharks	-	Y	Y
WOC Trawl	-	Y	Y
Seamount Groundfish	-	-	-
Pacific Billfishes and Sharks	-	Y	Y
Bering Sea Snails	-	Y	Y
Trawl and Herring Gillnet Fishery	-	Y	Y

Code: Y=Yes D=Domestic F=Foreign T=Time G=Gear

Table 3 continued

United States Management Measures in Effect

FMP's	Size Restrictions	Sex Restrictions	Limited Entry
Atlantic Groundfish	-	-	-
Atlantic Herring	Y	-	-
Butterfish	-	-	-
Atlantic Mackerel	-	-	-
Atlantic Squids	-	-	-
Surf Clams and Ocean Quahogs	-	-	Y/D
Stone Crab	Y	-	-
Commercial and Recreational Salmon	Y	-	Y/D1/
Northern Anchovy	Y	-	-
Gulf of Alaska Groundfish	-	-	-
Tanner Crab	Y	Y	-
High Seas Salmon	Y	-	Y/D
PMP's			
Atlantic Hakes	-	-	-
Other Finfish of the N.W. Atlantic	-	-	-
Atlantic Billfish and Sharks	-	-	-
WOC Trawl	-	-	-
Seamount Groundfish	-	-	-
Pacific Billfishes and Sharks	-	-	-
Bering Sea Snails	-	-	-
Trawl and Herring Gillnet Fishery	-	-	-

Code: Y=Yes D=Domestic F=Foreign T=Time G=Gear
1/ Implemented by States

Source: Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, U.S. Dept. of Commerce, NOAA, NMFS, Washington, D.C., March 1981, Table 8, pp. 74-75.

Icelandic Fishery Policy and Management Techniques

In 1973, the Icelandic government enacted legislation giving the Minister of Fisheries power to enact conservation and management measures that would restore over-exploited fisheries[51]. The legislation enacted by the Icelandic Parliament (Althing) was in response to the depleted herring stocks and declining cod stocks within the waters surrounding the island. During the previous year, Iceland had extended its fisheries jurisdiction to 50 NM[52]. In 1976, the Parliament revised the 1973 legislation[53] to include those fisheries that existed within the 200 NM FCZ established in 1975[54].

Iceland's fishery policy is quite clearly stated in Article 1 of the 1976 Fisheries Act (Appendix 1) - "The object of the present Act is to promote the growth and maximum utilization of the fish stocks within the Icelandic fisheries jurisdiction." The Act is a relatively short document which primarily establishes the authority of the Minister of Fisheries to enact conservation and management measures to those fisheries within the FCZ. The primary management technique to be instituted by the Minister of Fisheries is area and seasonal closures. As stipulated in Article 3, the Parliament established areas and periods of time when fishing was permitted. The specific locations of

the designated areas were established after public hearings were held by the Parliament in the major fishing ports. The purpose of the hearings was to ensure that the measures taken were equitable and would not severely impact the fishing industry. Although areas were defined in the Act, Article 7 does enable the Minister of Fisheries, if justified, to change or create new areas.

As provided for in Article 8, the Parliament also gives limited power to the Marine Research Institute. Without approval of the Minister of Fisheries, the Marine Research Institute can prohibit specific fishing for up to seven days in specified areas if an appreciable amount of protected species are found in catches. Within that seven day period the Minister of Fisheries must determine what measures, if any, are to be taken in those specified areas.

Within Article 8, an interesting provision should be noted. The provision deals with the qualifications of masters on fishing inspection vessels. As stated quite succinctly, "The masters shall have experience of fishing, including trawl fishing." This statement seems to indicate the intention of the government to ensure that those who inspect and are involved in fisheries management know the fisheries and can communicate easily with the commercial fishermen.

Fisheries Management Techniques As mentioned in the previous section, the primary fisheries management technique utilized by Iceland is area and seasonal closures. Other techniques are also authorized in Article 12 and include, but are not limited to, gear restrictions, minimum mesh sizes of nets, and minimum sizes of species that may be landed. Although quotas are not specifically authorized in the Act, they are being utilized for certain species that have been overfished and are in danger of being totally depleted. Table 4 lists those fisheries that Iceland manages and the techniques utilized for each fishery.

Table 4

Icelandic Management Measures in Effect

	Mesh Size	Fish Size	Area and Seasonal Closures	Quotas
Cod[1]	X	X	X	
Haddock	X	X	X	
Pollock	X	X	X	
Coal Fish	X		X	
Red Fish	X		X	
Herring		X	X	X
Prawn			X	X
Norway Lobster			X	X
Scallops			X	X
Capelin	X	X	X	X
Norway Pout	X		X	X
Pecten				X
Shrimp	X		X	X

[1] A total ban on cod fishing is for 150 days for stern trawlers and 35 days for other vessels. When cod fishing is prohibited it means that the cod catch cannot be more than 15% of the total catch in each fishing trip.

Source: Correspondence dated January 27, 1982
Mr. G. Thorsteinsson
Marine Research Institute

Comparison of United States and Icelandic Fishery Policies

Similarities The most prevalent similarity between the U.S. and Icelandic fishery policies is the fact that the policy of each nation is based on one piece of legislation, which directly relates to the 200 NM FCZ. Each legislation establishes a hierarchy in which overall authority is designated to a government official. In the development of each respective fishery policy, both the U.S. and Iceland made an effort to ensure public participation took place. The U.S. has provided for public participation through the Regional Councils and during public hearings which take place prior to the implementation of FMP's. Iceland provided for public participation prior to the enactment of their 1976 Act when public hearings were held in major fishing ports[55].

Another similarity which has not been previously mentioned is the management of recreational fisheries. To date neither country is actively involved in managing this fisheries.

Differences Although certain aspects of the fishery policies of the U.S. and Iceland are similar, a greater number of differences exist. First of all, the fisheries management hierarchy is much less complicated in Iceland

than the U.S. When decisions are made in Iceland they can be implemented immediately. The Minister of Fisheries decides the management policy of each fisheries and if revisions in that policy are to be made they are done so within days. As previously mentioned, Article 8 of the 1976 Act enables the Marine Research Institute to immediately prohibit specified fishing up to seven days in specified areas if there is an indication that a particular stock is being overfished. The final decision as to what measures are to be taken is made by the Minister of Fisheries within that seven day period.

The U.S. policy is much more ambiguous and depends on whether an FMP has been established or not. If an FMP has not been established the Secretary of Commerce has the authority to implement such a plan. If an FMP has been implemented and the plan did not include measures to be taken when unforeseen circumstances occur, the Secretary of Commerce can take emergency action: However, such action may not be extended for more than 90 days[56]. During that 90 day period it is up to the Regional Councils to ensure the FMP is properly amended. The shortest period that a Regional Council can implement an amendment is six months[57].

Iceland's fishery policy is also different from the U.S.'s policy in regards to what fisheries are to be managed.

Iceland's policy is to manage only those fisheries that are in danger of being overfished[58]. The U.S., however, requires the development of FMP's for all fisheries within the FCZ (MFCMA Title III, Section 302h,1). This procedure can be and is quite time consuming, especially if one considers that each FMP takes at least six months to implement.

Although the U.S. and Iceland encourage the development of fisheries and promote efficiency in the utilization of the fisheries resources (Iceland Legislation Article 1 / U.S. MFCMA Title III, Section 301a,5), the U.S. appears to have fallen short of this goal. The U.S. has not emphasized or encouraged fishermen to provide good quality fish to the processor. Iceland, on the other hand, has made a strong effort to ensure that fishermen provide good quality fish[59]. An example of this is Iceland's regulation requiring gill netters to haul their nets daily[60]. This regulation ensures the delivery of fresh fish to the processor. To date, Iceland receives the highest prices for their fish on the world market[61].

When referring to the FCZ, mention has primarily been directed to the outer extremes of the 200 NM FCZ established by both the U.S. and Iceland. A difference exists, however, with the inner limits of the FCZ which has made fisheries management for Iceland much less com-

plicated. Iceland's Minister of Fisheries has responsibility over all fisheries within the 200 NM FCZ including those fisheries within the internal waters of the island. In the U.S., the federal government only has direct management responsibility over those fisheries that exist between the 3 NM Territorial Sea and 200 NMs. The coastal state has authority over the fisheries within the 3 NM Territorial Sea including the internal waters. It would appear that this management scheme requires a great deal of coordination, especially if a fish stock exists both in state and federal waters. Stipulations have been provided in the MFCMA (Title III, Section 306) which authorizes the Secretary of Commerce to override state jurisdiction, but only under specific circumstances.

Another difference existing between the U.S. and Icelandic fishery policies can be considered the most fundamental difference between the two nations. The difference is the policy related to foreign fishing. In 1980, Iceland only allowed an approximate 14% of its fisheries to be harvested by foreign fishing vessels[62]. During the same period of time, the U.S. allowed an approximate 58% of its fisheries to be harvested by foreign fishing vessels[63]. This difference clearly indicates the great commitment Iceland has to its fisheries resources. It should be noted that since such a large portion of the U.S. fisheries is

harvested by foreign fishing vessels, the U.S. government can and has used this as a bargaining tool when dealing with foreign nations. The concept of "Fish and Chips"[64] is such an example in which a foreign nation in agreeing to reduce certain trade barriers would receive increased U.S. fisheries allocations. Other examples of fisheries allocations being used in international politics include the U.S.'s revocation of the U.S.S.R.'s fishing permit in 1980[65] in response to their invasion of Afghanistan, and the revocation of Poland's permit in 1981 in response to their government's incurment of martial law.

Comparison of United States and Icelandic Fisheries Management Techniques

Similarities Within the field of fisheries management, certain basic management techniques have been established. As has already been mentioned these include area and seasonal closures, gear restrictions, quotas, mesh size regulations, fish size regulations, and limited entry. To date, both the U.S. and Iceland have incorporated similar techniques to varying degrees, and have also utilized more than one technique for a particular fisheries, as seen in Tables 3 and 4. Another similarity in the management of fisheries between the U.S. and Iceland is the concept of determining annually the total amount of a particular fisheries that can be harvested without having a detrimental effect on the stock. The U.S. classifies this level as Optimum Sustainable Yield (OSY)[66], and Iceland classifies it as Total Allowable Catch (TAC)[67]. It should be noted, that since such a large portion of the U.S. fisheries is harvested by foreign fishing vessels, as mentioned in the previous section, the accuracy of the OSY is very critical and has a large impact on the domestic fisheries. Once the OSY is calculated a determination is made on how much of the fish can be harvested by the domestic fishermen. The difference between the OSY and the amount the domestic fishermen can harvest is the amount that can be harvested

by the foreign fishing vessels, Total Allowable Level of Foreign Fishing (TALFF)[68]. Iceland, on the other hand, does not have to be as concerned with the accuracy of the TAC, due to the fact that such a small portion of the fisheries is caught by foreign fishing vessels. If adjustments are needed, the government only has to deal with the domestic fishermen.

Differences As mentioned above, the management techniques utilized by the U.S. and Iceland are similar; however, a major difference exists as to the varying degrees they are used. In review of the various FMP's and PMP's implemented by the U.S., as seen in Table 3, there does not appear to exist any consistency in the management techniques utilized for the various fisheries. If one were to choose which technique was most commonly used, it would be quotas. It can, therefore, be concluded that the U.S. has emphasized management directed at controlling the total population of a fish stock. Iceland, on the other hand, has focused its fisheries management in a different direction which is controlling the composition of a fish stock. The primary means of management is the use of area and seasonal closures. Seasonal closures, as utilized by Iceland, may have the same effect as quotas in controlling total population. This is quite evident with Iceland's 1982 ban on cod fishing for 150 days for stern trawlers and 35 days

for other vessels[69]. Area and seasonal closures are primarily used to protect known spawning and nursing areas. Two other management techniques used heavily by Iceland are mesh size regulations and fish size regulations which also tie closely with controlling the composition of a particular fish stock. Quotas are used by Iceland, but only for those fisheries that have been severely overfished and require management methods that will directly relieve the pressure on the particular fish stock. As seen in Table 4, Iceland has only set quotas for herring, Norway lobster, prawn, scallops, capelin, Norway pout, pecten, and shrimp.

Conclusion

In review of U.S. and Icelandic fisheries management, it is quite evident a number of differences exist. These differences may in part be due to the overall differences in the countries themselves, such as size of the management area, the total amount of fish harvested annually, and consideration of foreign fishing interest. However, there are four aspects of Iceland's fisheries management policy that could be applied by the U.S., which would result in a more effective and efficient method of managing U.S. fisheries.

1) The organizational structure to manage U.S. fisheries should be simplified. Iceland's decision making process is quite simple and even though industry and the scientific community have an input as to what should be done, the final decision is made by the Minister of Fisheries. The result of this type of structure allows for quick management decisions and enables the manager to revise any decisions within days. The U.S. has devised a system that requires Regional Councils to develop FMP's and the Secretary of Commerce to approve or disapprove those plans. This procedure is time consuming, primarily because the Councils are comprised of members with divergent interests. Council members include federal officials, state officials, and

officials from various components of the fishing industry. In order to prepare an FMP, all parties must agree and the interest of all parties must be taken into consideration. In addition to the long process involved in preparing FMP's, procedures have also been established which require extensive public participation through the public hearing procedures that take place prior to the implementation of such fisheries plans. A more effective method of developing fisheries plans and to manage the fisheries in general, would involve the elimination of Regional Councils and the creation of a new position called the Regional Manager. The Regional Manager should have overall authority in managing the fisheries within his/her respective region. To ensure consistent national policy all actions should be channeled through the Secretary of Commerce. General guidelines should also be established by the Secretary of Commerce to ensure that the Regional Manager makes every effort to enact fair management plans. The Regional Manager should be selected by a consensus of the state governors within each respective region, with final approval authorized by the Secretary of Commerce. The result of such a selection process would ensure the Regional Manager is respected and known by the coastal states within a particular region. The term of office should be limited to a 2-4 year period. The short duration of the appointment would allow for change, if it were desired. It would be through the appoint-

ment process that would allow for input from the fishing industry and the public in general.

2) Another aspect of Icelandic fisheries management that should be adopted by the U.S., is the concept of utilizing a limited number of management techniques that would have the least impact on the fishermen. The quota system used by the U.S. does require accurate biological data, believed to be lacking, and also impacts the fishermen by restricting his effort. The U.S. also incorporates numerous other management techniques for the same fisheries, as seen in Table 3, and would no doubt lead to mass confusion by the fishermen. Iceland, on the other hand, has made every effort to minimize the number of management techniques utilized. To date, Iceland basically utilizes three techniques, which include area and seasonal closures, minimum mesh size of nets, and fish size regulations. The quota system is also used by Iceland but only for those fisheries that have been tremendously overfished. It should be noted that Iceland has focused on the use of area and seasonal closures because it serves more than one purpose. Not only can it be used to protect spawning and nursing areas, but can be used to restrict fishing where a large percentage of the catch is by-catch and can also be used as an effective method in dealing with gear conflicts.

3) An area where the U.S. appears to be changing its policy deals with determining what fisheries should be managed[70]. Iceland only manages the highly utilized species. The U.S. MFCMA requires FMP's to be developed for all fisheries[71]. This requirement is time consuming and is quite unnecessary for those fisheries that are in no danger of being overfished. The U.S. has made an indication that steps will be taken requiring FMP's to be developed only for the highly utilized species. Other fisheries, however, should not be ignored and monitoring should continue to take place which would be used to indicate if and when a particular fisheries needs to be managed.

4) An aspect that appears to be quite important to Iceland and should be seriously considered by the U.S., is the government's emphasis on providing a good quality product. Because Iceland has done intensive work to improve the efficient handling and processing of their fish, the country has been getting the highest prices on the world market[72]. This results in direct benefits to the fishermen and provides the inducement to properly handle the fish.

In conclusion, two unique features should be noted as being major contributing characteristics in minimizing problems in Iceland's fisheries management and would be of great value in the U.S. The first feature is communication.

Iceland has made every effort to ensure that all measures taken by the Minister of Fisheries are understood and basically agreed upon by the fishing industry. Although the fishing industry does not have direct input into the management practices utilized, the Minister of Fisheries ensures that he communicates with all interested parties[73]. The second unique feature is the basic philosophy of managing the fisheries. That philosophy has been to utilize the most simple and consistent management methods available. What has resulted from these techniques is an environment in which government officials and industrial officials, ranging from fishermen to processors, work closely together.

Footnotes

1. Magnuson Fishery Conservation and Management Act (MFCMA), Title I, Section 101, (PL-94-265).

2. H. Gary Knight, "Management in the U.S. Fishery Conservation Zone," Marine Policy, (Jan. 1978), p. 23.

3. Mar Elisson, Director of Fisheries, "Conservation and Management," Iceland 1981 Fisheries Yearbook, (Iceland Review, 1981), p. 8.

4. "The Icelandic Fishing Limits - A Scientific Study," European Free Trade Association Bulletin (EFTA), vol. 14, no. 5, p. 18.

5. Ambassador Andersen, Legal Advisor to the Icelandic Ministry of Foreign Affairs, "Iceland and the EEC/50 Miles Fisheries Limits - The Icelandic Case," EFTA Bulletin, vol. 13, no. 4, p. 16.

6. Ambassador Andersen, "Iceland Extends its Fishery Limits to 200 Miles," EFTA Bulletin, vol. 16, no. 9 (1975), p. 15.

NOTE: In 1979 Iceland's existing 200 NM FCZ became a 200 NM EEZ and the Territorial Sea was extended to 12 NM. "Iceland - Law Concerning the Territorial Sea, Exclusive Economic Zone, and Continental Shelf," International Legal Materials (ILM), vol. 18 (1979), p. 1504.

7. Elisson, p. 8.

8. Ibid.

9. Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, U.S. Dept. of Commerce, NOAA, NMFS, Washington, D.C., March 1981, p. 6.

10. Case Comments: "Foreign Fishing Quotas and Administrative Discretion Under the 200-Mile Limit Act," Boston University Law Review, vol. 58 (1978), p. 96.

11. Ibid.

12. Elisson, p. 8.

13. M.P. Sissenwine and J.E. Kirkley, "Fisheries Management Techniques: Practical Aspects and Limitations," Marine Policy, (Jan. 1982), p. 44.

14. Ibid., p. 53.

15. Ibid.

16. Ibid., p. 45.

17. Ibid., p. 44.

18. Ibid., p. 48.

19. Ibid.

20. Ibid.

21. Ibid., p. 49.

22. Ibid., p. 45.

23. Ibid., p. 49.

24. Ibid., p. 45.

25. Ibid., p. 44.

26. Ibid., p. 49.

27. Ibid., p. 45.

28. Ibid., p. 44.

29. Ibid., p. 55.

30. Ibid., p. 45.

31. MFCMA, Title I, Section 102. As stipulated in Title I, Section 102, the U.S. claims jurisdiction over anadromous species and continental shelf species in addition to the fisheries within the FCZ.

32. Kazimier Grzybowski, "The U.S. Fishery Conservation and Management Act 1976 - A Plan for Diplomatic Action," International and Comparative Law Quarterly, vol. 28, part 4 (October 1979), p. 693.

33. Gerhard von Glahn, Law Among Nations, 4th ed. (Macmillan Publishing Co. Inc., 1981), p. 355.

34. Knight, p. 23.

35. MFCMA, Title I, Section 101.

36. MFCMA, Title I, Section 102.

37. MFCMA, Section 3 (Definitions). Anadromous species as defined as the species which spawn in fresh water or estuarine waters of the U.S. and which migrate to ocean waters.

38. MFCMA, Section 3. Continental shelf fisheries as defined under "Definitions".

39. MFCMA, Section 3 (Definitions). Highly migratory species as defined as species of tuna.

40. MFCMA, Title II, Section 201c.

41. MFCMA, Title II, Section 201g.

42. Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, p. 72.

43. Gerald D. Hill, Jr., "Fishermen Enter 4th Year of Conservation," NOAA Magazine, vol. 10, no. 3 (May/June 1980), p. 2.

44. MFCMA, Title III, Section 304.

45. MFCMA, Title III, Section 302a.

46. MFCMA, Title III, Section 303a.

47. MFCMA, Title III, Section 301a.

48. MFCMA, Title III, Section 306a.

49. MFCMA, Title III, Section 306b.

50. MFCMA, Title IV, Section 401.

51. Elisson, p. 8.

52. Andersen, "Iceland and the EEC/50 Miles Fisheries Limits - The Icelandic Case," p. 16.

53. Elisson, p. 8.

54. Andersen, "Iceland Extends its Fishery Limits to 200 Miles," p. 15.

55. Correspondence dated January 27, 1982
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56. MFCMA, Title III, Section 305e.

57. Report to the Comptroller General of the United States, "Progress and Problems of Fishery Management Under the Fishery Conservation and Management Act," January 9, 1979, (CED-79-23).

58. Correspondence dated January 27, 1982
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59. Peter Hjul, "Problems of Plenty / Iceland's Cod Stocks are Recovering but Where Will All the Fish Be Sold?" Fishing News International, vol. 19, no. 9 (Sept. 1980), p. 13.

60. Correspondence dated January 27, 1982
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61. Steingrimur Hermannsson, Minister of Fisheries, "Introduction," Iceland 1981 Fisheries Yearbook, (Iceland Review, 1981), p. 7.

62. NOTE: Figure acquired from Table 2.

63. NOTE: Figure acquired from Table 2.

64. Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, p. 47.

65. Ibid., p. 65.

66. Ibid., p. 7.

67. Hjul, p. 3.

68. MFCMA, Title II, Section 201d.

69. Correspondence dated January 27, 1982
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70. Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, p. 47.

71. MFCMA, Title III, Section 302h-1.

72. Hermannsson, p. 7.

73. Correspondence dated February 23, 1982
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Appendix I

Act
Regarding Fisheries Within the Fisheries Jurisdiction of Iceland

SJÁVARÚTVEGSRÁÐUNEYTIÐ

A C T

regarding fisheries within the fisheries jurisdiction of Iceland

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Article 1

The object of the present Act is to promote the growth and maximum utilization of the fish stocks within the Icelandic fisheries jurisdiction.

Article 2

Foreign vessels shall be prohibited from any fishing within the fisheries jurisdiction of Iceland as it is determined in Regulation No. 299 of 15th July 1975 in pursuance of the provisions of Act No. 33 of 19th June 1922 regarding fishing rights within the fisheries jurisdiction.

Icelandic vessels are prohibited from fishing by means of bottom trawl, midwater trawl and seine net within the fisheries jurisdiction except where special authority for such fishing is granted by the present Act.

Article 3

Icelandic vessels are permitted to fish by means of bottom trawl and midwater trawl within the fisheries jurisdiction in the areas and during the periods of time now to be specified,

provided that the Minister concerned does not exclude specific areas from such fishing. (There follows a detailed statement of the areas and periods of time during which Icelandic vessels are permitted to fish).

.....

Article 4

In the case of arctic ice closing normal fishing grounds within the fisheries jurisdiction, the Minister concerned on the recommendation of the Marine Research Institute may grant permits for trawl fishing in addition to those specified in the present Act for a limited period of time in specified areas.

Article 5

The Minister may divide fishing areas between kinds of gear and thus restrict the permits granted under the present Act by prohibiting the use of certain kinds of gear in specified areas for a limited period of time.

Article 6

In case of the killing of fry and small fish taking place in specific areas in a measure considered alarming or dangerous the Ministry of Fisheries shall take the necessary steps to prevent such killing. The Ministry may impose a ban on all trawl fishing in such areas, and also on other fishing if considered necessary. The comment of the Marine Research

Institute shall always be at hand before such time-limited fishing restrictions are lifted.

Article 7

Notwithstanding the provisions of the present Act the Ministry of Fisheries may give notice of new conservation areas and modifications of older conservation areas in which fishing by means of bottom trawl and midwater trawl or other kinds of fishing gear is prohibited in specified areas of the Icelandic fisheries jurisdiction, the opinion of the Marine Research Institute having previously been sought.

Article 8

In addition to the inspection carried out by the Coast Guard, it is proposed that special inspection vessels operated by the Marine Research Institute shall keep fishing within the fisheries jurisdiction under observation for the purpose of preventing immoderate killing of small fish or other harmful fishing. The master of each inspection vessel shall be a special representative of the Minister of Fisheries and engaged by him in consultation with the Marine Research Institute. The masters shall have experience of fishing, including trawl fishing.

The Minister may place special representatives on board fishing vessels as considered necessary. It is the duty of skippers of fishing vessels to give the inspectors such assistance and facilities on board their vessels as further

decided in the letters of instruction issued to the inspectors by the Ministry of Fisheries.

Whenever masters of inspection vessels, leaders of expeditions of Marine Research Institute vessels or special representatives according to paragraph 2 notice any appreciable amount of fish or small lobster or protected species in catches, they shall accordingly immediately notify the Marine Research Institute or any of the specified fish scientists especially designated for such purpose by the Director.

The Marine Research Institute may upon the receipt of such notifications prohibit specified fishing for up to 7 days in specified areas. Such sudden closings become effective when announced over the wireless or telecommunication apparatus by the respective masters of inspection vessels, leaders of research expeditions or representatives of the Minister.

The Coast Guard shall be notified of the sudden closings in accordance with paragraph 4 as soon as they have been decided and furthermore the Ministry of Fisheries shall be notified of such sudden closings and of the grounds on which they are based. The Ministry in consultation with the Marine Research Institute will then decide within 7 days what measures, if any, are necessary for the protection of young fish or protected species in the area in question.

Article 9

Officials of the State Fish Quality Control shall keep the composition of landed catches under observation and notify the Ministry at once if they find unlawful amounts of small fish in catches

It is the duty of skippers of fishing vessels to enter such information about composition of catches in the

catch logbook as the Fisheries Association of Iceland may require.

Article 10

Upon the reasoned opinion of the Marine Research Institute that individual fish stocks are being dangously overexploited and their propagation in imminent peril, the Minister in consultation with the Marine Research Institute, acting on the advice of the Fisheries Association of Iceland, may issue rules regarding the maximum permissible catch of each species during a specified period of time, or season or for a whole year.

Article 11

When trawl fishing vessels are situated within the fisheries jurisdiction in areas where fishing is prohibited, they shall have all gear stowed inboard, trawl doors in fastenings and nets tied up.

Article 12

The Minister will issue rules regarding all matters pertaining to the performance of the present Act, such as types and make of gear, minimum mesh sizes of nets and minimum sizes of the species that may be landed. Rules regarding these points shall never fall short of international conventions on the same subject which Iceland has ratified or will ratify.

Article 13

Notwithstanding the provisions of Article 2, seine net fishing shall be allowed according to special or general permits granted by the Minister. The Minister may decide to permit seine net fishing in a specified area or areas during the period 15th June to 30th November, or for shorter periods of time. Seine net fishing permits according to such decisions may be granted to Icelandic vessels of 20 meters or less in length. The Minister may require such conditions for the permits as he considers necessary.

The authority for granting seine net fishing permits does not comprise fishing in Faxa Bay.

Article 14

The catching of prawn, lobster, herring, capelin, Norway pout and blue whiting by means of bottom trawl or mid-water trawl shall be subject to special or general permits of the Minister. Such permits or allocation of permits are subject to conditions considered necessary by the Minister.

The Minister may also issue a Regulation subjecting other fishing by means of specified gear to special or general permits.

Article 15

The Minister on proposal of the Marine Research Institute may grant permits for experimental fishing and other scientific research within the fisheries jurisdiction.

Such permits need not be restricted to Icelandic nationals, but experiments and research shall always be conducted under the control of the Marine Research Institute.

Article 16

Fishing permits according to Articles 13 - 15 shall always be time-bound, and the opinion of the Marine Research Institute and the Fisheries Association of Iceland shall at all times be sought before permits are granted. Moreover, the Minister will seek the opinion of others when considered necessary.

Article 17

Infringements of Articles 2, 3, and 5 - 8 of the present Act are punishable by fines, as follows:

1. In the case of vessels 39 meters or less in length the fines shall amount to 4.000 - 20.000 gold krónur.
2. In the case of vessels over 39 meters in length the fines shall amount to 14.000 to 40.000 gold krónur.

All fines according to the present Article are based on gold krónur, cf. Act No. 4 of 11th April 1924.

Infringements as above shall also be punishable by confiscation of gear, including warps, as well as all the catch on board. If the skipper cannot be reached, the vessel itself or a part of its value may be confiscated. Confiscation may also be applied when a criminal action arising out of violations has not been brought and when a criminal action cannot be brought.

An action for confiscation may then be brought against the owners of the vessel, its agents, or trustees.

A vessel shown to have been fishing illegally shall be arrested upon arrival in port and may not be released until judgment has been passed in the action brought by the Public Prosecution against the skipper, or his case settled in some other manner and fine and costs paid in full. A vessel may be released sooner, however, if a bank guarantee or other similar security accepted by the judge has been placed for payment of the fine and costs.

A lien shall be enforced on the vessel in satisfaction of payment of fines and costs according to the present Article.

Article 18

Infringements of Article 11, or rules according to Articles 10 and 12, or the provisions of permits according to Articles 13 - 15, are punishable by fines of 2.000 - 14.000 gold krónur, cf. Act No. 4 of 11th April 1924, and confiscation of catch according to law regarding confiscation of illegal catches, as applicable. If infringements do not come under the provisions of that law, confiscation of catch and gear shall take place according to Article 17 in the case of a repeated offence.

If it is evident from all the circumstances that the vessel has neither been fishing inside the fisheries limit nor preparations made for the purpose, the case may be settled by admonision in the case of a first offence, but in the case of

a repeated offence by fines of 2.000 - 14.000 gold krónur, cf. Act No. 4 of 11th April 1924.

Article 19

Any person guiding a vessel while fishing illegally within the Icelandic fisheries jurisdiction, or assisting the vessel while so doing, or helping the guilty person to escape punishment, shall be fined 2.000 - 14.000 gold krónur, cf. Act No. 4 of 11th April 1924. The same punishment shall apply to any person on board the trawl fishing vessel or boat alongside the vessel while pursuing illegal fishing inside the fisheries jurisdiction, unless he can give such an account of his presence as will make it probable that he has no part in the illegal fishing.

The provisions of the present Article do not apply to persons listed as crewmembers of the fishing vessel.

Article 20

Any skipper becoming guilty of a repeated violation of the provisions of the present Act may, in addition to the fines according to Article 17, paragraph 1 of Article 18, and Article 19, be sentenced to imprisonment for up to 6 months. Furthermore, and at other times, in the case of gross violations, the skipper may receive the same punishment for the first offence against the provisions of the said Articles.

The skipper may also be deprived of his master's certificate for a specified period of time for repeated violations

of the provisions of the present Act, and he may also be deprived of the right to engage in specific kinds of fishing for up to 30 days.

Article 21

Fines and proceeds of confiscated property according to the present Act shall pass to the Coast Guard Fund. The agreement of the Ministry concerned shall always be sought in regard to the sale of confiscated catch and gear. However, gear may never be sold to the guilty person, and catch only in the case of pressing necessity.

Article 22

Actions arising out of violations of the provisions of the present Act shall be treated as criminal actions.

Article 23

From the date of the present Act entering into force, Act No. 102 of 27th December 1973 regarding fishing by means of bottom trawl, midwater trawl and seine net within the fisheries jurisdiction, and subsequent Acts regarding amendments of that Act, cf. Act No. 14 of 26th March 1974 and Act No. 72 of 14th October 1975, shall cease to be effective. Act No. 73 of 5th December 1975 shall however remain in force. Moreover, Regulations issued in accordance with the above-mentioned Acts shall remain in force.

Article 24

The present Act shall enter into force 1st July 1976.

Temporary provisions

Vessels previously enjoying fishing permits according to the measurement 105 gross registered tons and under, and 350 gross registered tons and under, and vessels of 26 m and under and 39 m and under, shall continue to enjoy the same fishing permits according to the present Act.

Notwithstanding the provisions of Article 13, vessels of 45 gross registered tons and under and having enjoyed seine net fishing rights shall enjoy the same fishing rights.

Passed at the Althing 19th May 1976.

Appendix II

Correspondence dated January 27, 1982
Mr. G. Thorsteinsson
Marine Research Institute

HAFRANNSÓKNASTOFNUNIN
MARINE RESEARCH INSTITUTE

YOUR REF.

OUR REF. F-27 GÞ/kj

SKÚLAGATA 4

REYKJAVÍK, 27/1/82

TELEGR.: HAFRANNSÓKN
TELEPHONE: 20240
P.O. BOX: 390

Mr. Ted I. Lillestolen
University of Rhode Island
Dept. of Geography and Marine Affairs
Rm. 318 Washburn Hall
Kingston, Rhode Island 02881
U.S.A.

Dear Mr. Lillestolen.

Thank you for your letter from January 8. 1982. The director of our institute Mr. Jón Jónsson has asked me to reply to your letter.

As I have already answered many letters on the Icelandic fisheries management I simply enclose copies of my correspondance with Mr. Sheldon in 1978. These enclosures are marked A-G in chronological order. As you will notice the Icelandic fisheries management is rather complicated. Confused by my letters Mr. Sheldon decided to visit us to get first hand informations. After his visit Mr. Sheldon wrote an article in a fisheries magazine and sent us a copy. Unfortunately there were still some errors. Perhaps you should write to Mr. Sheldon to get his article. You could send us a copy for revision.

Some things have changed since 1978. In the following the main changes, mostly concerning enclosure B:

1) The cod fishing ban of the trawler fleet has become longer gradually and will be some 160 days in 1982. This means that not more than 15% of the landings during these periods may be cod. The ships owners can choose these periods in accordance with some general rules.
2) The capelin catches are now strictly quoted.
3) We have different rules of the amount of small cod in the

catches when we close fishing grounds for trawling or other fisheries. In 1978 (encl. B p. 2-3) our limit was 40% of cod less than 58 cm. Now this limit is 15% less than 53 cm. These number differ from year to year according to the size of the 4 years old agegroup and its body-length. The aim is to catch only some 16% of the 4 years old cod each year.

4) The minimum mesh size of Danish seine is now 155 mm for the whole gear.
5) The minimum mesh size for bottom set gillnets is now 6" for the period 1. july - 31. december.

Our selectivity experiments have been reviewed (see encl. H).

The areas where trawling and other fishing methods are forbidden temporary or totally change from year to year. The chart (encl. I) gives some ideas how complicated this is.

Now I hope you can puzzle these informations together to get a rough picture of our fisheries management. You also mentioned some statistics would be useful. We are now preparing our annual report of the state of our most important marine stocks, including some statistics. As this report will include an English abstract it could be of some help for you. It will be available in some 4-6 weeks time, You can get a copy if you want.

Dont hesitate to write again if you should need further information.

Yours sincerely

Gudni Thorsteinsson

G. Thorsteinsson

Enclosures: A-I

A.

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CABLE: DEVSCI

REGIONAL OFFICE
WASHINGTON, D. C.

January 23, 1978

The Marine Research Institute
Skulagata 4
Reykjavik, Iceland

Gentlemen:

This letter is to formally request copies of any available information you may have regarding fisheries management regulations for the Iceland Fishery Conservation Zone. I am particularly interested in the following information:

- Mesh selectivity data
- Relationship of mesh size to annual yield, if any
- Data regarding the gill net fishery and its management
- Data regarding the long line hook fishery and its management
- The historical economic effect of increasing mesh size.

I recognize that this is a burdensome request; however, the need to now design a management plan for the New England gound fishery requires careful study of other nations' management schemes. Thank you very much.

Sincerely yours,

Charles Sheldon

CS/dlo

B.

F-44/78 - GTH/se 9/2/78

Mr. Charles Sheldon
Development Sciences Inc.
P.O.Box 144
Sagamore, Massachusetts 02561
(617) 888-0101
U.S.A.

Dear Mr. Sheldon,

Mr. J. Jónsson, director of the Marine Research Institute has asked me to reply to your letter from Jan. 23, if possible on less than 20 pages. I will do my best but my view is that yours questions are so complex that only a thick book would bring you sufficient information.

If we start with the historical effect of increasing the mesh size in bottom trawls I would draw your attention to the paper: "Minimum fish and mesh size regulations in Iceland. ICNAF Comm. Doc. 75/19", a copy of which is enclosed (marked A).

This paper has however to be updated as we have made several new regulation since 1975. Let us start with the minimum fish size. Following alterations have been made: cod 50 cm, haddock 45 cm, coalfish 50 cm and from redfish 95% must be 500 gr. or more.

Also new mesh regulations have been made. The minimum mesh size for bottom and pelagic trawls is still 135 mm. In those areas, however, where no redfish if found the minimum mesh size of the last 8 m of the codend is no less than 155 mm. An enclosed copy of a chart (marked B) shows how these areas are.

This mesh size increase aims at a better (more optimal) utilization of the cod stock which is now completely under our own management. It is difficult to calculate how great the economic effect of this

is still not strict enough for an optimal utilization of the stock but the minister of fisheries has refused to accept our proposals. For other species we also have such minimum size limits. Then we have rules when to stop fishing with small meshed trawls (prawn, Nephrops, Norway pout) due to killing of small fish of valuable species.

Then back to the selectivity. All our mesh size regulations base on results of selection experiments of the Marine Research Institute, gear section (to a great deal consisting of my person only).

For your information we entirely use polyethylene in our bottom trawls, the codend being of double twine of up to R 12000 tex. As a top side chafer the Polish system must be used. This means that each mest of the chafer must cover 4 meshes of the upper side of the codend. The mesh size of the chafer thus must be good twice as big as that of the codend (because of the knot in between). Enclosure D explains this further. The selection factors found by that gear rigging are rather low as can be seen in the selection curves shown in enclusures E-H.

Curve E shows the normal selection for cod where "normal" means catch of 1 metric ton or less per trawling hour. Curve F shows the mesh inferior selection when the catch was 4 metric tons per hour. This explains the need for protecting the small cod by other methods as previously mentioned.

Curve G shows the selection curve for haddock under "normal" conditions. Unfortunately we did not get very big catches of this species during our trials.

Finally curve H shows selection of redfish which has happened to be very different due to different rigging of the chafer and many other factors. The curves indicate the best and worst results we got. In case of the poorer curve the mesh size of the chafer was exactly twice as big as that of the codend. So the big meshes did not cover the smaller meshes in the correct way. In general however the results of the redfish selection are somewhat differing. In case of good catches the selection is definately poor and certainly poorer as shown in the curves H. So we do have problems with the catching of undersized redfish and consequently we have probibited trawling on an area

Due to these retulations we believe that our cod-stock can hardly been seriously over-fished. It is however over-exploited predominantly because of intensive trawling on immature fád.

Fish quality This as a very difficult problem as the fish dies in the PA-netting. If the nets can be hauled every day the quality is fair to good. If the nets are hauled less frequently the quality ás of course worse. In such cases the fish cannot be frozen. Some part will be salted or even dried for a stockfishmarket in Nigeria. In extreme cases the fish cannot been used at all.

The only regulation which is effective to solve this problem is the limitation of the amount of nets with which each vessel may catch as already mentioned. In addition the vessels may not have their net in the sea during easter and the fish would stay at least two days in the nets. Howewer the fish quality has been improving in the last years as the vessel size gradually increases. The bigger ships are less dependent upon the weather.

Gear conflict The most frequent conflicts are between gill-netters and trawlers, in the past often foreign trawlers. The lack of knowledge of each other languages may explain this to some extent. We have however a flexible system of regulations to solve this problem in the way that each type of fishing gear has emme special areas where no other gear may be used. This does not prevent that the gill-netters may come in fánflicts with each other. Such conflicts seldom become serious. The boats simply haul the net fleets in the correct order.

Ghost nets Lost gillnets are sometimes called ghost nets. The fisher men take all care to prevent to loose their nets (and catch). The nets are wxpensive and so ts the fish. If the fleet cannot been found it will been tried to pick up up with a kind of anchor which is systematically twoed over the position where net fleet is expected. Such operations are often successful. In spite of all precaution nets get lost. I personally dont believe that the ghost nets continue to catch fish. Other opinions also exist. Here we also have some regulations. One of them obliges the fishermen to use

C.

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BOSTON, MASS.
WASHINGTON, D. C.

17 May 1978
Charles Sheldon

Mr. G. Thorsteinsson
Hafrannsoknastofnunin
Marine Research Institute
Skulagata 4
Reykjavik
Iceland

Dear Mr. Thorsteinsson:

Last winter I wrote you a long letter with many questions concerning the conservation techniques your country is using with respect to fisheries management. Your return to me was most helpful and I understand the complexity of the issue (I think) but must now respectfully ask several more questions of you.

As you know we have been experimenting here with management plans under extended jurisdiction that are new, untested, and subject to considerable legal interpretation and confusion. I reread your letter today because I was interested in several management areas you referred to but did not elaborate upon. I should also tell you that there are many people here in New England who feel strongly the need to examine closely the management systems of other nations rather than assuming the United States has the best and last answer - in fisheries I feel we represent a developing nation much of the time.

Concerning the groundfishery here in New England, a management plan developed by fishermen argued strongly for vessel quota allocations by vessel tonnage class, with annual quotas proportional to historical harvest. I do not wish to discuss this proposal with you at this time but would rather ask you several questions that have come up repeatedly when considering this plan and others:

1. You mention an overseer board of very active ex-fishermen. What do these people do, specifically? What is their authority and how is it granted to them? How are these people selected?

2. The rumor here is that now Iceland has adopted quotas and has also adopted a limited license (entry) system. Is this true? Your letter to me indicated what I thought to be a strong effort on your part to avoid establishment of quotas but rather to regulate on the basis of gear restrictions, area closures, and season closures. What prompted you to establish quotas if you have done so? And with respect to license systems and entry limitation - this can be fairly categorized as the hottest

HAFRANNSÓKNASTOFNUNIN

D.

F-181/78 - GTH/se 30/5/78

Mr. Charles Sheldon
Development Sciences Inc.
P.O.Box 144
Sagamore, Massachusetts 02561
(617) 888-0101
U.S.A.

Dear Mr. Sheldon,

Thank you for your letter from 17 May. I was glad to read that my first letter was "most helpful" for you and that convinces me that a visit to Iceland would be "most valuable".
I will do my best to answer your questions but I feel that each answer will lead to some new questions. This reminds me of several dragon legends where two heads appear for each one which is cut off. So after some more letters you might have a multiheaded monster to deal with. It will be easier to kill it in Iceland.

1. The inspectors measure fish length. If the fish is smaller than our minimal demands, for instance more than 40% of the cod smaller than 55 cm (by number) they inform us immediately.and we close an area as proposed by the inspector involved for a week. During that week we check onrthe area with one of our research vessels or with a commercial vessel with an inspector on board. The final decision then makes the ministry of fisheries.

In case of trawling with small meshed trawls (prawn, Norway pout, Nephrops etc.) we have an upper limit of small fish which may be killed for a certain quantity of "real catch". For instance for each 1000 kg of prawn some 1000-2000 small fish will be the upper limit depending on whether it is 0 or I-group and cod or haddock. Then 3 herrings correspond to 1 haddock. Fortunately the small fish are much less abundant. These calculations are ecomomical i.e. at the upper limit the prawn catch equals the loss in fish catch caused by prawn fishery. These calculations are certainly not so

The Pectén fishery is regulated by quotas for each sub-area. The intenest for this fishery has not been very great. Thus the boats most of time can catch without restrictions unless some areas could be closed. Frequently the capacity of the only processing factory worth mentioning is the only reducing factor.

All those quota regulations have been accepted by all people involved. In the most cases the best skippers will make the biggest catches. And this gives the best guarantee that the maximum substainable yield will be obtained and maintained for the benefit of all parties.

On all other species there are no quotas so far. Our institute has calculated the desirable quantities of some important species to be caught each year. However no quotas have been realized on these species (cod, haddock, coalfish, redfish, Greenland halibut inter alia). These fisheries are regulated by other methods (see 1. letter) which do not always prevent some overfishing.

The licence-system is complicated. Often there is a maximum boat size or horse power count. Which decide if the licence can be obtained. Purse seiners which participate in the capelin fishery are not permitted to catch herring too. The rules are very frequently altered depending on the situation for the time being. So I simply surrender, hence responsible for some new dragon heads.

3. There are no special restrictions for handliners and longliners. Sometimes however it may become necessary to have special areas for longliners and other for gillnetters in order to prevent gear conflicts.

The handliners are often small boats unable to fish very far from the coast. As they operate on shallow water they can release the undersized fish alive. Unfortunately they don't do so if they can somehow sell this fish.

The longliners usually don't operate on very shallow water near the coast simply because they don't get acceptable catches there. Certainly the length composition of the fish is sometimes poor.

parliament. These proposals were accepted with some alterations.

5. This question probably had been answered already to some extent. In some cases there is a plain single species management. In bottom trawling the catches are sometimes mixed even on the same fishing ground. Nevertheless most of the regulations are made to protect our most important fish stock the cod. Some species f.i. Greenland halibut and redfish live more or less separately from other species. So quotas on these species would be unproblematic. Other species, cod, haddock and saithe, often are available on the same grounds at the same time. Therefore quotas in this case could cause some difficulties.

In general our management is a great progress as compared with the uncontrolled fisheries by many nations as previously practised. We are all the time trying to improve our methods. Unfortunately the cod stock is nevertheless overexploited since there is no quota in use. All other restrictions do not suffice because the fishermen first of all want cod, the most expensive species (except some few less plentiful available).

Hoping that these informations may help you I am

Yours sincerely,

Gudni Thorsteinsson

E.

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BOSTON, MASS.
WASHINGTON, D. C.

September 6, 1978

Mr. Gudni Thorsteinsson
Hafrannsoknastofnunin
Marine Research Institute
Skulagata 4
Reykjavik
Iceland

Dear Mr. Thorsteinsson:

This is a long overdue letter of thanks to you for your long and most interesting responses to my letters of 23 January and 17 May 1978. I have been working on other projects over the summer and have managed to keep the many-headed dragon you have shown me at bay. For the moment I have no further questions of you, save one: has your country yet placed a quota on cod? We hear varying reports about cod quotas in Iceland, and I am not sure. Over here, you see, we have quotas on everything, or appear to, and yet you seem to have not placed a quota on your most prized fish -- cod. Do you feel a quota on cod is inevitable; if not, do you then feel that with other regulations you can conserve the stock? I guess I am asking you why you have no cod quota if cod are your most valuable fish.

I see I have more than one question after all, and maybe the dragon is crawling back into view.

My apologies for all these queries.

Sincerely,

Charles Sheldon

Charles Sheldon

CS:jbp

HAFRANNSÓKNASTOFNUNIN

F.

F-264/78-GÞ/kþ Sept.25.'78

Mr. Charles Sheldon
Debelopment Sciences Inc.
B.O.Box 144
Sagamore, Massachusetts 02561
(617) 888-0101
Washington, D.C.

Dear Mr. Sheldon,

Thank you for your letter from September 6. We don't have any quota on cod and there are no plans in that direction as far as I know. Our institute has for some years made proposals for cod quota since we think this would result in better utilization of the cod stock. The problem is how to divide the quota between the vessels and/or the fishing villages/towns and between different fishing gear. It is our opinion that a cod quota would be very important, some of us probabely would say inevitable.

We are now going into a poor cod period since the yearclasses from '74 and '75 are poor. The '76 yearclass is very big, that from '77 moderate and the '78 yearclass seams to be of a good average. For your information the yearclasses of '72 and '73 were good and have been heavily fished. If we take the cod 5-9 years old the different sizes of the yearclasses would not result in very differing annual catches. Now we take a too big part of the fish at the age of 4 and 5 with the consequence that the annual catches are poorer and more varying than necessary.

A quota system is a valueable step to solve the problem but it is not the whole solution. We must catch the fish older than we do now and we must catch cod the whole year because of the fishing industry. A quota system does not guarantee this.

Finally for your information we have in the last months closed (for good) some new areas for cod fishing.

Hoping that this helps keeping the dragon at bay for a while I am

Yours sincerely,

G. Thorsteinsson.

G.

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BOSTON, MASS.
WASHINGTON, D. C.

October 17, 1979

Mr. Gudni Thorsteinsson
Marine Research Institute
Skulagata 4
Reykjavik
Iceland

Dear Mr. Thorsteinsson:

A pleasure speaking with you this morning. This letter is to confirm my plans to travel to Iceland October 29, arriving October 30. Upon arrival, I shall telephone you. I very much appreciate your assistance regarding hotel reservations.

I have spoken with several people here who are directly involved with fisheries management for the waters off New England. Presently under consideration is a new management strategy based upon gear/area regulations and close cooperation with industry. I have received from these individuals many specific questions about your management system; briefly, how does it work, what has your management history been, and how successful has your system been concerning groundfish?

While I realize I cannot fully describe a technique you have developed for years on the basis of a short visit, I am hopeful I can speak with enough individuals to at least determine how many heads the dragon is likely to grow.

I look forward to this visit with great anticipation.

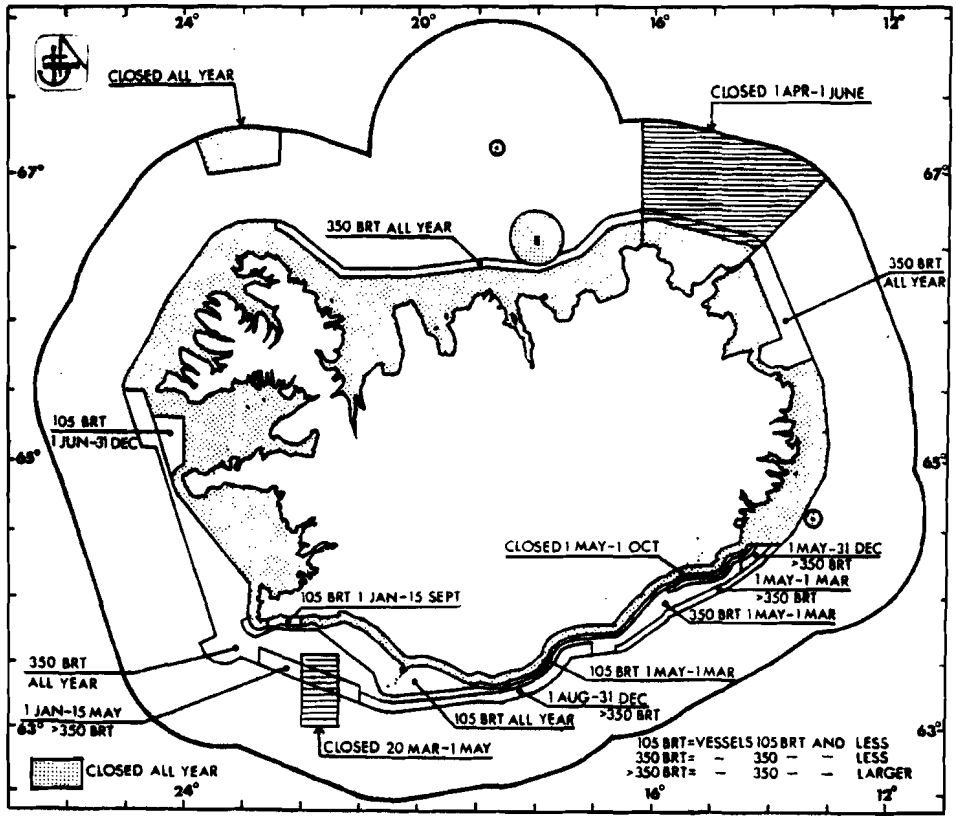
Sincerely,

Charles Sheldon

CS/ks

I

Appendix II



Areas and periods in which use of trawl is allowed by Icelandic vessels inside the fishery limit, according to law nr. 102 27 December 1973. This law is now being revised.

Appendix III

Correspondence dated February 23, 1982
Mr. Magnus Olafsson
Ministry of Fisheries

where great quantity of small redfish is available (see enclosure C).

As mentioned in enclusure A we use Danish seine mainly for exploitation of plaice. The selectann factor of this species is very low dus to its shape. Therefore the minimum mesh size in the codends of the Danish sáines has been increased to no less than 170 mm. Consequently this type of gear does not catch small fishes of other species. The selection curves for plaice in Danish seine and bottom trawl-without a top side chager - are shown in enclusure I. The datag datwhich the curves are based are rather limited.

Next to a point which I should have started with. That is the mesh size measurements. In our experiments we always have used the ICES-gauge with a pressure of 4 kgf. The minimum mesh size is controlled with a plate, in shape lóke a cake server. The ICES-gauge measures the meshes some 5 mm smaller than does the cake server in the strong hands of the controllers. So some 5 mm must be added to all mesh sizes indicated in the selection curves.

The to the gillnet fisheries. Lazy by nature I will use an updated version of my reply to the Department of Fisheries in Charlottentown, Canada, from 18/4 '77.

<u>The overfishing</u> 1) Meshsize. In the time from Feb. 1 to June 30 the minimum meshsize is 178 mm (7"). In the other time of the year the minimum máshsize is 140 mm (5 1/2"). Thus, in our gillnas fisheries mainly big and mature cod is caught.

2) Fishing areas. In some relatively big areas. all fishing is prohibited during the spawning season. This has already been mentioned.

3) Fishing effort. The number of nets which each vessel may use at the same time is limited depending on the crew aize: A crew of 3 or less may have up to ~~60~~ 45 single nets. A crew of 4 og 5 may not have more than 75 nets. A crew of 6 og 7 may have up to 90 nets. A crew of 8 or 9 may have up to 105 nets. A crew of 10 may have 120 nets, 11 may have 135 nets and a crew of 12 or more may have up to 150 nets.

3: 45 nets
4: 60 –
5: 75 –
6 +: Unchanged.

particular regulation is since several other regulations were put into force at the same time. Moreover the fishing effort of the trawlers will to a greater extent concentrate on the bigger and older fish as the smaller fish now escape through the meshes.

It would be worthwhile just to mention those other regulations. Firstly the areas where trawling if forbidden have been extended to a great deal. The reason for this is that mainly small cod (and other species) are living in these areas. A great deal of this fish could be caught in spite of the great meshes if the schools are dense enough as will be explained later.

Secondly all fishing is prohibited on the favourite cod spawning ground during the high spawning time. This is to keep the rapidly decreasing spawning stock at a fair level and to ensure a good recruitment-nature permitting.

The closed areas are shown on the chart marked C. This chart also shows many other fishing grounds which are temporarily closed or open only for small vessels. The system is rather complicated and cannot been explained within the limits of this letter.

Then a remarkable step in protecting the cod stock has been made. This is a complete ban to catch cod during announced periods which added up to some 5 weeks in 1977. It can be mentioned here that a quota system is used in the fisheries on the following species; herring, prawn, Norway lobster (Nephrops norwegicus), scallop (Pecton) and capelin (in preparation).

Then the probabely most interesting novelty has to be mentioned. This is a team of controllers, consisting of very active ex-skippers. They measure fish and check on mesh size and other gear regulations on sea and shore and report every detail immediately to us. Our institute can in case of serious catching of small fish close fishing grounds for all or some fishing gears for a week. The ministry of fisheries then takes the final decision weaponed with our advice. Of course we have our system when to stop the fisheries. In case of cod a fishing stop takes place when more than 40% of the fishes by number are less than 58 cm long. We have calculated that this limit

particular regulation is since several other regulations were put into force at the same time. Moreover the fishing effort of the trawlers will to a greater extent concentrate on the bigger and older fish as the smaller fish now escape through the meshes.

It would be worthwhile just to mention those other regulations. Firstly the areas where trawling if forbidden have been extended to a great deal. The reason for this is that mainly small cod (and other species) are living in these areas. A great deal of this fish could be caught in spite of the great meshes if the schools are dense enough as will be explained later.

Secondly all fishing is prohibited on the favourite cod spawning ground during the high spawning time. This is to keep the rapidly decreasing spawning stock at a fair level and to ensure a good recruitment-nature permitting.

The closed areas are shown on the chart marked C. This chart also shows many other fishing grounds which are temporarily closed or open only for small vessels. The system is rather complicated and cannot been explained within the limits of this letter.

Then a remarkable step in protecting the cod stock has been made. This is a complete ban to catch cod during announced periods which added up to some 5 weeks in 1977. It can be mentioned here that a quota system is used in the fisheries on the following species; herring, prawn, Norway lobster (Nephrops norwegicus), scallop (Pecton) and capelin (in preparation).

Then the probabely most interesting novelty has to be mentioned. This is a team of controllers, consisting of very active ex-skippers. They measure fish and check on mesh size and other gear regulations on sea and shore and report every detail immediately to us. Our institute can in case of serious catching of small fish close fishing grounds for all or some fishing gears for a week. The ministry of fisheries then takes the final decision weaponed with our advice. Of course we have our system when to stop the fisheries. In case of cod a fishing stop takes place when more than 40% of the fishes by number are less than 58 cm long. We have calculated that this limit

Article 24

The present Act shall enter into force 1st July 1976.

Temporary provisions

Vessels previously enjoying fishing permits according to the measurement 105 gross registered tons and under, and 350 gross registered tons and under, and vessels of 26 m and under and 39 m and under, shall continue to enjoy the same fishing permits according to the present Act.

Notwithstanding the provisions of Article 13, vessels of 45 gross registered tons and under and having enjoyed seine net fishing rights shall enjoy the same fishing rights.

Passed at the Althing 19th May 1976.

Appendix II

Correspondence dated January 27, 1982
Mr. G. Thorsteinsson
Marine Research Institute

Conclusion

In review of U.S. and Icelandic fisheries management, it is quite evident a number of differences exist. These differences may in part be due to the overall differences in the countries themselves, such as size of the management area, the total amount of fish harvested annually, and consideration of foreign fishing interest. However, there are four aspects of Iceland's fisheries management policy that could be applied by the U.S., which would result in a more effective and efficient method of managing U.S. fisheries.

1) The organizational structure to manage U.S. fisheries should be simplified. Iceland's decision making process is quite simple and even though industry and the scientific community have an input as to what should be done, the final decision is made by the Minister of Fisheries. The result of this type of structure allows for quick management decisions and enables the manager to revise any decisions within days. The U.S. has devised a system that requires Regional Councils to develop FMP's and the Secretary of Commerce to approve or disapprove those plans. This procedure is time consuming, primarily because the Councils are comprised of members with divergent interests. Council members include federal officials, state officials, and

officials from various components of the fishing industry. In order to prepare an FMP, all parties must agree and the interest of all parties must be taken into consideration. In addition to the long process involved in preparing FMP's, procedures have also been established which require extensive public participation through the public hearing procedures that take place prior to the implementation of such fisheries plans. A more effective method of developing fisheries plans and to manage the fisheries in general, would involve the elimination of Regional Councils and the creation of a new position called the Regional Manager. The Regional Manager should have overall authority in managing the fisheries within his/her respective region. To ensure consistent national policy all actions should be channeled through the Secretary of Commerce. General guidelines should also be established by the Secretary of Commerce to ensure that the Regional Manager makes every effort to enact fair management plans. The Regional Manager should be selected by a consensus of the state governors within each respective region, with final approval authorized by the Secretary of Commerce. The result of such a selection process would ensure the Regional Manager is respected and known by the coastal states within a particular region. The term of office should be limited to a 2-4 year period. The short duration of the appointment would allow for change, if it were desired. It would be through the appoint-

ment process that would allow for input from the fishing industry and the public in general.

2) Another aspect of Icelandic fisheries management that should be adopted by the U.S., is the concept of utilizing a limited number of management techniques that would have the least impact on the fishermen. The quota system used by the U.S. does require accurate biological data, believed to be lacking, and also impacts the fishermen by restricting his effort. The U.S. also incorporates numerous other management techniques for the same fisheries, as seen in Table 3, and would no doubt lead to mass confusion by the fishermen. Iceland, on the other hand, has made every effort to minimize the number of management techniques utilized. To date, Iceland basically utilizes three techniques, which include area and seasonal closures, minimum mesh size of nets, and fish size regulations. The quota system is also used by Iceland but only for those fisheries that have been tremendously overfished. It should be noted that Iceland has focused on the use of area and seasonal closures because it serves more than one purpose. Not only can it be used to protect spawning and nursing areas, but can be used to restrict fishing where a large percentage of the catch is by-catch and can also be used as an effective method in dealing with gear conflicts.

3) An area where the U.S. appears to be changing its policy deals with determining what fisheries should be managed[70]. Iceland only manages the highly utilized species. The U.S. MFCMA requires FMP's to be developed for all fisheries[71]. This requirement is time consuming and is quite unnecessary for those fisheries that are in no danger of being overfished. The U.S. has made an indication that steps will be taken requiring FMP's to be developed only for the highly utilized species. Other fisheries, however, should not be ignored and monitoring should continue to take place which would be used to indicate if and when a particular fisheries needs to be managed.

4) An aspect that appears to be quite important to Iceland and should be seriously considered by the U.S., is the government's emphasis on providing a good quality product. Because Iceland has done intensive work to improve the efficient handling and processing of their fish, the country has been getting the highest prices on the world market[72]. This results in direct benefits to the fishermen and provides the inducement to properly handle the fish.

In conclusion, two unique features should be noted as being major contributing characteristics in minimizing problems in Iceland's fisheries management and would be of great value in the U.S. The first feature is communication.

Iceland has made every effort to ensure that all measures taken by the Minister of Fisheries are understood and basically agreed upon by the fishing industry. Although the fishing industry does not have direct input into the management practices utilized, the Minister of Fisheries ensures that he communicates with all interested parties[73]. The second unique feature is the basic philosophy of managing the fisheries. That philosophy has been to utilize the most simple and consistent management methods available. What has resulted from these techniques is an environment in which government officials and industrial officials, ranging from fishermen to processors, work closely together.

Footnotes

1. Magnuson Fishery Conservation and Management Act (MFCMA), Title I, Section 101, (PL-94-265).

2. H. Gary Knight, "Management in the U.S. Fishery Conservation Zone," Marine Policy, (Jan. 1978), p. 23.

3. Mar Elisson, Director of Fisheries, "Conservation and Management," Iceland 1981 Fisheries Yearbook, (Iceland Review, 1981), p. 8.

4. "The Icelandic Fishing Limits - A Scientific Study," European Free Trade Association Bulletin (EFTA), vol. 14, no. 5, p. 18.

5. Ambassador Andersen, Legal Advisor to the Icelandic Ministry of Foreign Affairs, "Iceland and the EEC/50 Miles Fisheries Limits - The Icelandic Case," EFTA Bulletin, vol. 13, no. 4, p. 16.

6. Ambassador Andersen, "Iceland Extends its Fishery Limits to 200 Miles," EFTA Bulletin, vol. 16, no. 9 (1975), p. 15.

NOTE: In 1979 Iceland's existing 200 NM FCZ became a 200 NM EEZ and the Territorial Sea was extended to 12 NM. "Iceland - Law Concerning the Territorial Sea, Exclusive Economic Zone, and Continental Shelf," International Legal Materials (ILM), vol. 18 (1979), p. 1504.

7. Elisson, p. 8.

8. Ibid.

9. Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, U.S. Dept. of Commerce, NOAA, NMFS, Washington, D.C., March 1981, p. 6.

10. Case Comments: "Foreign Fishing Quotas and Administrative Discretion Under the 200-Mile Limit Act," Boston University Law Review, vol. 58 (1978), p. 96.

11. Ibid.

12. Elisson, p. 8.

13. M.P. Sissenwine and J.E. Kirkley, "Fisheries Management Techniques: Practical Aspects and Limitations," Marine Policy, (Jan. 1982), p. 44.

14. Ibid., p. 53.

15. Ibid.

16. Ibid., p. 45.

17. Ibid., p. 44.

18. Ibid., p. 48.

19. Ibid.

20. Ibid.

21. Ibid., p. 49.

22. Ibid., p. 45.

23. Ibid., p. 49.

24. Ibid., p. 45.

25. Ibid., p. 44.

26. Ibid., p. 49.

27. Ibid., p. 45.

28. Ibid., p. 44.

29. Ibid., p. 55.

30. Ibid., p. 45.

31. MFCMA, Title I, Section 102. As stipulated in Title I, Section 102, the U.S. claims jurisdiction over anadromous species and continental shelf species in addition to the fisheries within the FCZ.

32. Kazimier Grzybowski, "The U.S. Fishery Conservation and Management Act 1976 - A Plan for Diplomatic Action," International and Comparative Law Quarterly, vol. 28, part 4 (October 1979), p. 693.

33. Gerhard von Glahn, Law Among Nations, 4th ed. (Macmillan Publishing Co. Inc., 1981), p. 355.

34. Knight, p. 23.

35. MFCMA, Title I, Section 101.

36. MFCMA, Title I, Section 102.

37. MFCMA, Section 3 (Definitions). Anadromous species as defined as the species which spawn in fresh water or estuarine waters of the U.S. and which migrate to ocean waters.

38. MFCMA, Section 3. Continental shelf fisheries as defined under "Definitions".

39. MFCMA, Section 3 (Definitions). Highly migratory species as defined as species of tuna.

40. MFCMA, Title II, Section 201c.

41. MFCMA, Title II, Section 201g.

42. Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, p. 72.

43. Gerald D. Hill, Jr., "Fishermen Enter 4th Year of Conservation," NOAA Magazine, vol. 10, no. 3 (May/June 1980), p. 2.

44. MFCMA, Title III, Section 304.

45. MFCMA, Title III, Section 302a.

46. MFCMA, Title III, Section 303a.

47. MFCMA, Title III, Section 301a.

48. MFCMA, Title III, Section 306a.

49. MFCMA, Title III, Section 306b.

50. MFCMA, Title IV, Section 401.

51. Elisson, p. 8.

52. Andersen, "Iceland and the EEC/50 Miles Fisheries Limits - The Icelandic Case," p. 16.

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54. Andersen, "Iceland Extends its Fishery Limits to 200 Miles," p. 15.

55. Correspondence dated January 27, 1982
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56. MFCMA, Title III, Section 305e.

57. Report to the Comptroller General of the United States, "Progress and Problems of Fishery Management Under the Fishery Conservation and Management Act," January 9, 1979, (CED-79-23).

58. Correspondence dated January 27, 1982
Mr. G. Thorsteinsson
Marine Research Institute

59. Peter Hjul, "Problems of Plenty / Iceland's Cod Stocks are Recovering but Where Will All the Fish Be Sold?" Fishing News International, vol. 19, no. 9 (Sept. 1980), p.13.

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Marine Research Institute

61. Steingrimur Hermannsson, Minister of Fisheries, "Introduction," Iceland 1981 Fisheries Yearbook, (Iceland Review, 1981), p. 7.

62. NOTE: Figure acquired from Table 2.

63. NOTE: Figure acquired from Table 2.

64. Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, p. 47.

65. Ibid., p. 65.

66. Ibid., p. 7.

67. Hjul, p. 3.

68. MFCMA, Title II, Section 201d.

69. Correspondence dated January 27, 1982
Mr. G. Thorsteinsson
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70. Calendar Year 1980 Report on the Implementation of the Magnuson Fishery Conservation and Management Act, p. 47.

71. MFCMA, Title III, Section 302h-1.

72. Hermannsson, p. 7.

73. Correspondence dated February 23, 1982
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Ministry of Fisheries

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Appendix I

Act
Regarding Fisheries Within the Fisheries Jurisdiction of Iceland

SJÁVARÚTVEGSRÁÐUNEYTIÐ

A C T

regarding fisheries within the fisheries jurisdiction of Iceland

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Article 1

The object of the present Act is to promote the growth and maximum utilization of the fish stocks within the Icelandic fisheries jurisdiction.

Article 2

Foreign vessels shall be prohibited from any fishing within the fisheries jurisdiction of Iceland as it is determined in Regulation No. 299 of 15th July 1975 in pursuance of the provisions of Act No. 33 of 19th June 1922 regarding fishing rights within the fisheries jurisdiction.

Icelandic vessels are prohibited from fishing by means of bottom trawl, midwater trawl and seine net within the fisheries jurisdiction except where special authority for such fishing is granted by the present Act.

Article 3

Icelandic vessels are permitted to fish by means of bottom trawl and midwater trawl within the fisheries jurisdiction in the areas and during the periods of time now to be specified,

provided that the Minister concerned does not exclude specific areas from such fishing. (There follows a detailed statement of the areas and periods of time during which Icelandic vessels are permitted to fish).

.....

Article 4

In the case of arctic ice closing normal fishing grounds within the fisheries jurisdiction, the Minister concerned on the recommendation of the Marine Research Institute may grant permits for trawl fishing in addition to those specified in the present Act for a limited period of time in specified areas.

Article 5

The Minister may divide fishing areas between kinds of gear and thus restrict the permits granted under the present Act by prohibiting the use of certain kinds of gear in specified areas for a limited period of time.

Article 6

In case of the killing of fry and small fish taking place in specific areas in a measure considered alarming or dangerous the Ministry of Fisheries shall take the necessary steps to prevent such killing. The Ministry may impose a ban on all trawl fishing in such areas, and also on other fishing if considered necessary. The comment of the Marine Research

Institute shall always be at hand before such time-limited fishing restrictions are lifted.

Article 7

Notwithstanding the provisions of the present Act the Ministry of Fisheries may give notice of new conservation areas and modifications of older conservation areas in which fishing by means of bottom trawl and midwater trawl or other kinds of fishing gear is prohibited in specified areas of the Icelandic fisheries jurisdiction, the opinion of the Marine Research Institute having previously been sought.

Article 8

In addition to the inspection carried out by the Coast Guard, it is proposed that special inspection vessels operated by the Marine Research Institute shall keep fishing within the fisheries jurisdiction under observation for the purpose of preventing immoderate killing of small fish or other harmful fishing. The master of each inspection vessel shall be a special representative of the Minister of Fisheries and engaged by him in consultation with the Marine Research Institute. The masters shall have experience of fishing, including trawl fishing.

The Minister may place special representatives on board fishing vessels as considered necessary. It is the duty of skippers of fishing vessels to give the inspectors such assistance and facilities on board their vessels as further

decided in the letters of instruction issued to the inspectors by the Ministry of Fisheries.

Whenever masters of inspection vessels, leaders of expeditions of Marine Research Institute vessels or special representatives according to paragraph 2 notice any appreciable amount of fish or small lobster or protected species in catches, they shall accordingly immediately notify the Marine Research Institute or any of the specified fish scientists especially designated for such purpose by the Director.

The Marine Research Institute may upon the receipt of such notifications prohibit specified fishing for up to 7 days in specified areas. Such sudden closings become effective when announced over the wireless or telecommunication apparatus by the respective masters of inspection vessels, leaders of research expeditions or representatives of the Minister.

The Coast Guard shall be notified of the sudden closings in accordance with paragraph 4 as soon as they have been decided and furthermore the Ministry of Fisheries shall be notified of such sudden closings and of the grounds on which they are based. The Ministry in consultation with the Marine Research Institute will then decide within 7 days what measures, if any, are necessary for the protection of young fish or protected species in the area in question.

Article 9

Officials of the State Fish Quality Control shall keep the composition of landed catches under observation and notify the Ministry at once if they find unlawful amounts of small fish in catches

It is the duty of skippers of fishing vessels to enter such information about composition of catches in the

catch logbook as the Fisheries Association of Iceland may require.

Article 10

Upon the reasoned opinion of the Marine Research Institute that individual fish stocks are being dangously overexploited and their propagation in imminent peril, the Minister in consultation with the Marine Research Institute, acting on the advice of the Fisheries Association of Iceland, may issue rules regarding the maximum permissible catch of each species during a specified period of time, or season or for a whole year.

Article 11

When trawl fishing vessels are situated within the fisheries jurisdiction in areas where fishing is prohibited, they shall have all gear stowed inboard, trawl doors in fastenings and nets tied up.

Article 12

The Minister will issue rules regarding all matters pertaining to the performance of the present Act, such as types and make of gear, minimum mesh sizes of nets and minimum sizes of the species that may be landed. Rules regarding these points shall never fall short of international conventions on the same subject which Iceland has ratified or will ratify.

Article 13

Notwithstanding the provisions of Article 2, seine net fishing shall be allowed according to special or general permits granted by the Minister. The Minister may decide to permit seine net fishing in a specified area or areas during the period 15th June to 30th November, or for shorter periods of time. Seine net fishing permits according to such decisions may be granted to Icelandic vessels of 20 meters or less in length. The Minister may require such conditions for the permits as he considers necessary.

The authority for granting seine net fishing permits does not comprise fishing in Faxa Bay.

Article 14

The catching of prawn, lobster, herring, capelin, Norway pout and blue whiting by means of bottom trawl or mid-water trawl shall be subject to special or general permits of the Minister. Such permits or allocation of permits are subject to conditions considered necessary by the Minister.

The Minister may also issue a Regulation subjecting other fishing by means of specified gear to special or general permits.

Article 15

The Minister on proposal of the Marine Research Institute may grant permits for experimental fishing and other scientific research within the fisheries jurisdiction.

Such permits need not be restricted to Icelandic nationals, but experiments and research shall always be conducted under the control of the Marine Research Institute.

Article 16

Fishing permits according to Articles 13 - 15 shall always be time-bound, and the opinion of the Marine Research Institute and the Fisheries Association of Iceland shall at all times be sought before permits are granted. Moreover, the Minister will seek the opinion of others when considered necessary.

Article 17

Infringements of Articles 2, 3, and 5 - 8 of the present Act are punishable by fines, as follows:

1. In the case of vessels 39 meters or less in length the fines shall amount to 4.000 - 20.000 gold krónur.
2. In the case of vessels over 39 meters in length the fines shall amount to 14.000 to 40.000 gold krónur.

All fines according to the present Article are based on gold krónur, cf. Act No. 4 of 11th April 1924.

Infringements as above shall also be punishable by confiscation of gear, including warps, as well as all the catch on board. If the skipper cannot be reached, the vessel itself or a part of its value may be confiscated. Confiscation may also be applied when a criminal action arising out of violations has not been brought and when a criminal action cannot be brought.

An action for confiscation may then be brought against the owners of the vessel, its agents, or trustees.

A vessel shown to have been fishing illegally shall be arrested upon arrival in port and may not be released until judgment has been passed in the action brought by the Public Prosecution against the skipper, or his case settled in some other manner and fine and costs paid in full. A vessel may be released sooner, however, if a bank guarantee or other similar security accepted by the judge has been placed for payment of the fine and costs.

A lien shall be enforced on the vessel in satisfaction of payment of fines and costs according to the present Article.

Article 18

Infringements of Article 11, or rules according to Articles 10 and 12, or the provisions of permits according to Articles 13 - 15, are punishable by fines of 2.000 - 14.000 gold krónur, cf. Act No. 4 of 11th April 1924, and confiscation of catch according to law regarding confiscation of illegal catches, as applicable. If infringements do not come under the provisions of that law, confiscation of catch and gear shall take place according to Article 17 in the case of a repeated offence.

If it is evident from all the circumstances that the vessel has neither been fishing inside the fisheries limit nor preparations made for the purpose, the case may be settled by admonision in the case of a first offence, but in the case of

a repeated offence by fines of 2.000 - 14.000 gold krónur, cf. Act No. 4 of 11th April 1924.

Article 19

Any person guiding a vessel while fishing illegally within the Icelandic fisheries jurisdiction, or assisting the vessel while so doing, or helping the guilty person to escape punishment, shall be fined 2.000 - 14.000 gold krónur, cf. Act No. 4 of 11th April 1924. The same punishment shall apply to any person on board the trawl fishing vessel or boat alongside the vessel while pursuing illegal fishing inside the fisheries jurisdiction, unless he can give such an account of his presence as will make it probable that he has no part in the illegal fishing.

The provisions of the present Article do not apply to persons listed as crewmembers of the fishing vessel.

Article 20

Any skipper becoming guilty of a repeated violation of the provisions of the present Act may, in addition to the fines according to Article 17, paragraph 1 of Article 18, and Article 19, be sentenced to imprisonment for up to 6 months. Furthermore, and at other times, in the case of gross violations, the skipper may receive the same punishment for the first offence against the provisions of the said Articles.

The skipper may also be deprived of his master's certificate for a specified period of time for repeated violations

of the provisions of the present Act, and he may also be deprived of the right to engage in specific kinds of fishing for up to 30 days.

Article 21

Fines and proceeds of confiscated property according to the present Act shall pass to the Coast Guard Fund. The agreement of the Ministry concerned shall always be sought in regard to the sale of confiscated catch and gear. However, gear may never be sold to the guilty person, and catch only in the case of pressing necessity.

Article 22

Actions arising out of violations of the provisions of the present Act shall be treated as criminal actions.

Article 23

From the date of the present Act entering into force, Act No. 102 of 27th December 1973 regarding fishing by means of bottom trawl, midwater trawl and seine net within the fisheries jurisdiction, and subsequent Acts regarding amendments of that Act, cf. Act No. 14 of 26th March 1974 and Act No. 72 of 14th October 1975, shall cease to be effective. Act No. 73 of 5th December 1975 shall however remain in force. Moreover, Regulations issued in accordance with the above-mentioned Acts shall remain in force.

MINISTRY OF FISHERIES
REYKJAVÍK

Mr. T.I. Lillestolen
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Dep. of Geography and Marine Affairs
Rm. 318 Washburn Hall
Kingston, Rhode Island 02881
USA

DATE 23 February 1982
REF. MÓ/st

Dear Mr. Lillestolen

Thank you for your letter of January 8th 1982 in which you ask for information about management techniques here in Iceland as it relates to fisheries. Unfortunately, we do not really have any litterature in English on the subject. However, enclosed are the following documents:

1. The Iceland 1981 Fisheris Yearbook, which you may find of some value.
2. The main points of a speech given last autum by one of our union leaders at a meeting of European leaders. This was written by me at his request with special respect to European interests, so you will probably find it of limited value - but one can never know.
3. The "Act regarding.... ..of Iceland" which provides the basic frameworks for conservation and optimum utilization measures.
4. Few points summarized by our deputy Secretary General last July.

Finally I think I ought to explain briefly our management system. Every November or December the Marine Research Institute recommends the total allowable catch (TAC) for each stock. The Ministry then begins to communicate with Icelandic vessel owners and fishermen. Working together with these both organizations in late December, the Ministry allocates quotas both with respect to fish stocks and the fishing fleet - in cases when the capacity of the fleet exceeds the point of an optimum yield of that fish stock.

The Ministry has also power to close special areas both permanently and temporarily. Both vessel owners and fishermen agree that it is necessary to invest such a power in the Ministry of Fisheries. On the whole, this system of management has been extremely effective - thanks to the responsible attitude of vessel owners and fishermen. In many cases these organizations have been advocating policies of conservation and management control. What matters most is that they think at an aggregate level and not as individuals.

We thank you for your interest in our fisheris. Hopefully, the enclosed documents will at least be of some use. You are, of course, most welcome to write us again.

Yours sincerely,

Magnús Ólafsson
Economist.

I C E L A N D

THE STRUCTURE AND CHARACTERISTIC OF THE FISHING INDUSTRY.

Fleet Structure.

Considerable structural changes have occurred in the Icelandic fishing fleet in the last years. Nevertheless, it can be stated that the pattern relating to these changes was already emerging before 1975. The rebuilding and expansion of the trawler fleet, the restructuring of the purse seine fleet, whereas the fleet of smaller inshore vessels has been of the decline.

The Icelandic fishing fleet now consists of 70 medium sized stern trawlers averaging just over 400 gr. reg. tons, 16 larger stern trawlers, average size 830 gr. reg. tons, 52 purse seiners, averaging just over 400 gr. reg. rons, and abuout 700 decked multi-purpose inshore vessels of below 250 gr. reg. tons. In addition thera are numerous open motorized boats, the greatest number of which is however sport fishing boats.

The trawlers operate with bottom trawl and mid-water trawl and are almost exclusively engaged in the demersal fishery.

The stern trawler expansion reflects the need of the processing plants to optain a more contant and reliable supply of fish than the seasonally operated long liners and gill netters are able to provide. By 1970 the trawler fleet consisted of about 20 side trawlers, which by now have either been scrapped or converted into purse seiners. The greatest part of the trawlers carry a relatively light crew of 15-16 instead of a crew of 30 of the side trawlers. Afer the decline of the Icelandic herring fishery during the late 60's, many of the vessels thus engaged turned to seining for herring in the North Sea during the summer and fall and capelin of the coast of Iceland during the winter. After the introdustion of more far reaching conservation measures for herring in the North Sea and the extension of the states boardering the North Sea to 200 miles fishery zone, most to these vessels turned to summer capelin fishery off the NW and N coast of Iceland in addition to the winter fishery for capelin.

Althougt several new additions to the purse seine fleet can be reported, the greater part of the vessels is relatively old, remnants from the herring boats of the 60's having however been lengthened, re-equipped and converted into shelter deckers. A number of these

vessels is also capable of trawling both with midwater trawl for f. ex.blue whiting and with bottom trawl for demersal species. As the majority of these vessels is engaged as described above, a number of them, especially the smaller ones, nevertheless participate in the fishery for demersal species with gill-nets particularly in April/May.

The inshore multi-purpose vessels rely mainly on the demersal fishery for cod, haddock, saithe etc. with gill-nets, long line and bottom trawl. The smaller ones however also use handline. They also are employed in catching lobster and shrimp with trawls and in the herring fishery now permitted during the autumn with drift nets and purse seine. Open motorized boats number more than 1.000 Last year around 400 are on record having landed fish for sale.

Conservation and Management Measures.

The fishery limits of Iceland were extended to 50 miles in 1972 and to 200 miles in 1975, reflecting both an economic necessity to acquire a greater share than roughly 50% of the more stable demersal catch not the least after the failure of the herring fishery during the late 60's, and the need to establish more effective conservation and management measures than the 12 mile limit permitted, for those important species of fish that were indisputably on the decline such as cod, haddock, plaice and herring. Other species such as redfish, saithe and others were by then considered fully utilized. The long term yield curve for cod had in fact a downward sloping trend since the late 50's.

In 1973 a new law was passed by the Althing empowering the Minister of Fisheries to adopt far reaching conservation and management measures with the aim of restoring overexploited stocks of fish to an optimum sustainable yield level and to secure an optimum exploitation level of all stocks of fish, crustacea and shellfish. This law was revised in 1976, relating to past experience and to the extension of the fishery limit to 200 miles. The measures adopted so far include i.a. an increase in the minimum mesh size of trawls in the demersal fishing from 120 m/m to 135 m/m and later to 155 m/m, except for redfish where for specified areas trawlers are allowed to use 135 m/m meshes. For Danish Seine the min. mesh size now is 155. The mesh size of all other gear is also regulated, such as lobster and shrimp trawls, gill nets and drift nets - and purse seines.

Special closed areas are established during the spawning periods of several species of fish. Closed areas for immature fish have been established both of a permanent nature and temporarily where immature fish below specified lengths (according to species) is abundant in the catch. Closed seasons are in force for capelin, herring, lobster and shrimp.

TAC quotas are inposed annually for herring, lobster and shrimp and TAC targets set for all other important species.

New inspection schemes have been adopted and older ones revised.

Ways and means to restrict excessive entry into the fishery are being studied, so as to extablish an optimum relationship between the capacity of the fish stocks and the fishing capacity of the fleet.

The Catch.

The total catch of all species in 1980 amounted to 1512,3 thousand metric tons. The Icelandic fish catch is usually subject to considerable fluctuations, to an important degree caused by fluctuations in the pelagic (herring and capelin) catch. The catch of demersal fish species amounted to 657 thousand tons in 1980 or 150 thousand tons more than in 1970. Cod represents roughly 65% of the total demersal fish catch.

After the near collapse of the Atlanto Scandian herring stock in the late 60's Icelandic herring catches have not been of great economic importance for the fishing industry as a whole, although increasing.

The herring catch in 1970 amounted to just over 50 thousand tons (in 1966 770 thousand tons). For a number of years no herring fishing has been allowed in Icelandic waters. Last year the herring catch amounted to 53 thousand tons. The TAC for 1981 has yet not been decided.

During the last few years the fishing for Norway Pout and Blue Whiting has varied from one year to another and has been up to some 60 thousand tons.

The bulk of the fish catch in 1980 consisted of capelin of which 760,0 thousand tons were landed, but that is 200,0 thousand tons less than both in 1978 and 1979.

The catch of lobster & shrimp has been relatively constant for a number of years - amounted to some 12 thousand metric tons in 1980. The catch of Iceland scallop amounted to 10 thousand tons.

Utilization of the catch.

Despite a very high rate of fish consumption in Iceland around 100 kg pr. capita pr. year - nominal weight, the greatest part of the total catch is processed for export. Almost all the demersal catch as well as that of herring, shellfish & crustacea is processed and exported for human consumption, fresh, frozen, and cured (salted or dried unsalted).

The bulk of the catch of capelin, Norway Pout and Blue Whiting is reduced into oil and meal, although a minor quantity is frozen or dried unsalted.

In 1980 68 thousand tons of fish were marketed fresh, 403 thousand tons processed by freezing plants, 275 thousand tons were salted and dried, whereas just over 764,0 thousand tons were used to produce fish meal & oils.

In addition to this 5.500 tons of fish roes were frozen or salted mainly for export, and 2.800 tons of valuable liver oils were produced, both for industrial purposes - with considerable quantity, however, being sold as medicinal oil.

Economic Role of the Industry.

Despite concerted efforts by the Government and by private industry to utilize Iceland's natural resources other than the living marine resources, notably, the hydroelectric and geo-termal potential, the economic role of the fishing industry is still of paramount importance. The productivity on the fishing industry as a whole is considerably higer than in most other industries.

The number of fishermen during the peak months of fishing is just over 6.000, the annual average number not exceeding 5.500.

The processing industry employds around 9.000 people. In all the fisheries sector employs 14-15% of the entire labour force, and accounts for more than 20% of the GNP. In 1980 exports of fish and marine products accounted for 75% of exports (visible account) amounting to current US$ 696,9 million.

Even if other industries and invisible earnings are taken into account, the contribution of the fishing industry is still dominant, and amounts to almost half of the total export value of goods and services. Moreover, since foreign imput in the fisheries sector is much lower than for instance in power intensive industries, it should be evident that the former account for a relatively high share in the growth of the Icelandic economy. Likewise, it is evident that regression in catches and prices of fish products will adversely affect the economy.

In 1980 about 541.000 tons (product weight) of fish and marine products were exported. The main markets were EEC countries 33,9%, America, principally the U.S.A. 28,4%, EFTA countries 11,9%, Comecon countries 9,9%, Africa 9,7%, other countries 6,2%.

On a value basis, frozen fillets and blocks and other frozen marine products continue to constitute the greater part of this export item but in 1980 salting and drying increased considerably.

Development Prospects.

As mentioned above all the side trawlers have by now been withdrawn from active service as such.

It is likely, in view of the state of the demersal fish stocks and measures taken by the Government concerning loans to shipbulding that the number of stern trawlers, will be constant during the next few years.

As the upper level of exploitation of the capelin stock have been reached, the number of purse seiners will not change and in fact bulding of new ships have been stopped.

It is also most likely, that the number and tonnage of the inshore fleet will continue to decline over the years to come.

Although the state of the fishstocks, particularly that of cod, continues to be a matter of concern, the conservation and management measures referred to above seem to have had beneficial effect. The stocks of cod, haddock, plaice and herring, most heavily exploited in the past are showing signs of recovery.

The overall development of the industry will continue to depend not only on the production protential, which is good in the longer run, but also on prices on the foreign market.

The prices of oil and oil related products (notably nets and twine) which started to rise in 1974 are causing serious problems not only for the terms of trade, but for the operating cost of fishing in particular.

Research.

The Icelandic Government operates two institutes for biological and oceanographic research as well as providing fish detection services for whish four vessels are at the institutes disposal. They also carry out research into the handling, storage and processing of fish and fish products.

Analytical economic investigations are carried out by, and under the auspices of, the Fisheries Association of Iceland, which also carry out technical research of fishing vessel construction and operating costs of fishing vessels.

Policy Aims.

The principal aim of the Icelandic Government is to establish sound management of the fish stocks so that this highly important sector of the country's economy can be maintained in a healthy condition. Furthermore, bearing in mind the fundamental importance of having unhindered access to the main markets, the removal of trade barriers is constantly being sought.

I. BACKGROUND

Apart from the rich fishing grounds above the continential shelf that surrounds Iceland, the country is very poor in natural resources. This fact has two major implications. First, fishing and fish processing form the very base of it's economy and, second, Iceland depends entirely on international trade for consumer goods, raw materials, fuel, capital goods, etc.,etc.. Revenue to pay for this import bill come from fish and fish products which have always been the main source of earnings of foreign exchange. No state comes anywhere near Iceland in its dependence on these products for the earnings of foreign currency. Fish and fish products make up less than 2% of the total export of such great fishing nations as Canada and Japan while Iceland's export has for a long time amounted to 80-90% although it has now, in the beginning of the eighties, declined to about 75%. It is therefore obvious that fishing is the dominant source of wealth, income, employment and welfare. Without it Iceland would have been uninhabitable.

The rich Icelandic fishing grounds have for centuries been exploited by Western-European countries. While tecnology was limited there was no problem of overfishing. But after the turn of the century it became evident that overfishing was threatening the Icelandic fish stocks. The European fishing nations began to use in ever increasing numbers larger trawlers and better equipped with sophistcated fishing gears and electronic equipments that hunt with deadly accuracy. In spite of the increasing efforts in Icelandic waters there was a considerable decrease in the catch of species like cod and haddock. Moreover, the proportion of small and immature fish in the catch was increasing all the time. In the light of the above, and bearing in mind the importance of fishing for the Icelandic

economy, it should not come as a surprise that successive Icelandic governments began in 1958 a sequence of decisions to extend the fisheries limits first to 12 miles and finally to 2oo miles in 1975. There is no doubt that those decisions saved the Icelandic economy. Since 1976, after the third cod war, the Icelanders have been in control over their fishing grounds, so they have been able to employ strict conservation measures and to implement a policy of rational utilization of the fish stocks. Until now, only minor foreign fishing has been allowed in Icelandic waters (see Table I). But last year the EEC requested to be allowed to fish within Icelands 200 miles fishery limit. Their request is based on the fact that a part of the fishery resources in the sea area between Greenland and Iceland consist of common stocks or highly interrelated stocks.

Table I: Foreign fishing of demersal species in Icelandic waters(tons).

	1980	1981 (quota)
Belgium	5.100	5.000
Faroese	17.033	17.000
Norway	2.206	2.000
Total	24.339	24.000

II. Distribution of fish stocks in the sea area between Greenland and Iceland.

The five most important species in this sea area are Capelin, Greenland Halibut, Redfish, Shrimp and Cod.

Capelin is a migratory species with a very short life span of 3-4 years. Acoustic surveys carried out by Iceland and Norway show that during its course/migration of between Jan Mayen, Iceland and East Greenland, the adult stock moves through different economic zones with the whole stock sometimes being found almost entirely in one of them. However, this stock is Icelandic since spawning takes place at the coast of Iceland.

Icelanders began a commercial exploitation of the Icelandic capelin for the production of meal and oil in the mid sixties and this fishery has since then become an important part of the Icelandic economy. Until 1976 the fishery took place in coastal waters at South-Iceland during the winter months of January-April and the catch consisted mainly of adults. This winter fishery has been conducted by Iceland alone apart from a small Faroese participation in 1977-79. In 1976 an Icelandic summer and autumn fishery was initiated in deep waters off North-Iceland. In 1978 Norway joined in the summer fishery taking her catch in the area west of Jan Mayen. Since then the stock has been managed jointly by Iceland and Norway. The objective is to maintain a minimum spawning stock and the conservation measures are designed to minimize the capture of 1 year old capelin in order to maximize their growth potential. It is important to realize that fishery by

nations that do not respect these objectives is extremely dangerous. The last two or three years, i.e. after the introduction of the summer and autumn fishery in 1976, Faroese Danish and Irish vessels have also taken part in the capelin fishery, their proportion varying between 1.8% and 4.7% of the total catch. Although there has been no directed fishery on 1 year old juveniles, last year they were nevertheless responsible for about 18% of the catch by number and 8% by weight.

Cod , which is the most important fish stock in Icelandic waters, is related to the Greenland cod stock in the sense that mature cod migrates from Greenland to Iceland and eggs drift from the spawning grounds at Iceland to East Greenland.

Greenland Halibut, Redfish and Shrimp are species that are caught on both sides of the midline between the two economic zones.

III. NEGOTIATIONS BETWEEN THE EEC AND THE GOVERNMENT OF ICELAND: ICELAND'S FISHERIES POLICY.

Ever since Iceland gained full control over its fishing grounds, it has followed a strict but a responsible fisheries policy. National legislation has provided for conservation measures going far beyond Western-European regulations. Large areas inside the fishery limit have been closed either to trawling or to all fishing temporarily or permanently to protect the sensitive spawning and nursery grounds. The Icelandic rules governing minimum sizes of fish are adapted to protect juveniles to a much greater extend than in Europe. In addition, the Icelandic regulations for minimum mesh sizes are considerably more conservation directed than those employed by other Western-European countries.

This responsible policy has been very effective indeed. Five years ago 25% of the total cod catch was 3 years fish or younger but is now arround 5%. It should not, therefore, come as a surprise that Iceland is worried about irrational fishing in Greenland waters. It is Iceland's policy that the parties should seek to agree upon the measures necessary to co-ordinate and ensure the conservation, development and rational management of these stocks. By Iceland's initiative, negotiations began in July 1980 and five meetings have been held since then. The Community wants to make a draft of an agreement on fisheries but Iceland, while accepting this, wants to discuss simultaneously conservation measures, methods of determining the total allowable catch (TAC) and the distribution of proportions of each stock between the respective economic zones. No substantial progress has been made in the negotiations. The main areas of

1) Although the parties accept the necessity of agreeing on the total allowable catch of capelin, the Community does not accept a unilateral decision made by Iceland in the case of a disagreement. This is a factor of major importance in the agreement between Norway and Iceland on capelin fishing.

2) The Community does not accept that an access to Icelandic harbours and service, in general, with the EEC fishing fleet in Iceland should be valued and taken account of in the agreement. Without such service it would be both difficult and dangerous to fish in Greenland waters.

3) The Community does not agree to take account of the present agreement between Iceland and Belgium which has been allowed to catch 5000 tons of demersal species within the 200 miles limit.

4) No conclusions have been reached on the proportion of each stock occurring in each zone, so the allocation of the TAC to each party is not possible even if the parties would agree on the TAC.

It is of vital importance for Iceland that the EEC will not determine unilaterally the total allowable catch because it is well known that the Community will decide a TAC far above what can be considered realistic. For instance, in 1980 the EEC decided on a TAC of redfish in the sea area east of Greenland of 42500 tons which was 50% of the TAC for the whole North Atlantic as suggested by the International Council for the Exploration of the Sea. During the period from 1965, the average proportion of the redfish catch coming from this area was less than 20%, so it is clear that the Community wants much higher proportion of the total catch than earlier.

Iceland's policy on foreign fishing in the sea area arround Iceland is, however, clear: Iceland will not, under any circumstances, allow further foreign fishing to take place within it's fishery limit. It does, however, respect the fact that a part of the fishery resources of these areas consist of interrelated stocks exploited by fishermen of both Iceland and EEC countries. Effective conservation and rational management of these stocks can therefore only be achieved through cooperation.

Measures for the conservation and optimum utilization of Icelandic fisheries.

Following the extension in 1975 of the Icelandic fisheries limits to 200 nautical miles various measures have been taken to ensure the conservation and optimum utilization of the fisheries within those limits. In 1976 comprehensive legislation was adopted, Act No 81/1976 regarding Fisheries within the Fisheries Jurisdiction of Iceland, which, as amended, provides the basic framework for such measures. The Act empowers the Minister of Fisheries to promulgate regulations directed at conservation and management of the fisheries and in general has made possible more flexible and effective measures. The Act moreover restricted the areas within which fishing by bottom and midwater trawl is permitted. The penalties for infringement of regulations have also been made more severe.

The conservation and management measures which have been applied in recent years include the following:

Mesh size

As a general rule minimum mesh size has been increased in recent years, e.g. for midwater and bottom trawl nets 155 mm., Danish seine nets 155 mm. and cod nets 7 inches. Furthermore, minimum mesh sizes have been established in fisheries where they had not previously existed, e.g. shrimp, Norway pout and capelin.

Size limits of fish

The minimum size of most species has been increased, e.g. cod and pollock to 50 cm. and haddock to 45 cm. Furthermore, minimum sizes have been established for species which had not previously been subject to such limits, e.g. herring (27 cm.) and capelin (12 cm.)

Closed areas

The permanently closed areas have been increased in size and new closed areas established where spawning takes place and where small fish are found. In addition, since 1976 a system has been in operation which provides for the closing for up to 7 days of given areas upon the recommendation of the Marine Research Institute, should its inspectors note a large proportion of small fish in given catches. This method has been applied frequentley every year and has resulted

in some cases in closing of the given areas for longer periods.

Special measures for conservation of cod

In recent years special measures have been taken as a consequence of the state of the cod stocks. These include establishment of periods during which cod fishing is prohibited.

This year a total ban on cod fishing is for 150 days for stern trawlers and 35 days for other vessels. When cod fishing is prohibited it means that the cod catch must not be more than 15% of the total catch in each fishing trip. Also fishing with gill-nets have be prohibited especially durning spring and summertime.

Due to these measures we have been able to strengthen the cod stoch and the proposals from the Marine research Institute for T.A.C. on cod have increased every year.

Quotas

Quotas have been set in certain fisheries, e.g. in herring, shrimp and lobster, and regulations established to ensure the optimum utilization of such quotas (e.g. to ensure processing for human consumption and to minimize deterioration of catch prior to landing).

Appendix IV

Correspondence dated March 3, 1982
Mr. Mar Elisson
The Fisheries Association of Iceland

FISKIFÉLAG ÍSLANDS
(THE FISHERIES ASSOCIATION OF ICELAND)
HÖFN INGÓLFSSTRÆTI - 101 REYKJAVÍK, ICELAND
TELEGR.: FISKIFÉLAG - P. O. BOX 20

REYKJAVÍK, March 3rd, 1982.

OUR REF. Y/1/ME/kg

YOUR REF.

Mr. Ted I. Lillestolen
University of Rhode Island
Dept. of Geography and Marine Affairs,
Rm 318 Washburn Hall
Kingston, Rhode Island 02881.

Dear Mr. Lillestolen,

In reply to your letter of Jan. 8th, I am enclosing a translation of the Fisheries Act from 1976 - not a very good translation I am afraid - together with a few other papers - indicating how the law is applied through rules and regulations.

The law is rather flexible and the rules are constantly changed in the light of experience gained and to meet changed circumstances.

The enclosed papers do indicate, that the management of the fisheries has on the whole been rather sucessful - especially from the biological point of view.

Communication between Government officials scientists and fisherman have as a rule been good - and the strict rules imposed subsequent to the extension of the fishery limits were accepted by the fishermen - and more so, after favourable results became tangible. There are forums through which officials and scientists have the possibility to exchange views - with representatives from the fishing industry, thereamong the annual convention of this organization, as well as meetings through out the country which I attend regularly, sometimes accompanied by scientists and economists.

Apart from the enclosed papers, you might be referred to the annual Review of Fisheries of the OECD, Paris.

I shall be attending the Law of the Sea Conferencs in New York beginning around March 20th. If I can be of further help my address will be:

Roger Smith Hotel,
Lex Ave. & 47th, New York,
Tel. 212 - 755 - 1400.

Yours sincerely,
Már Elísson.

Licencing of Icelandic vessels is still relatively scarce although on the increase. We must remember that licencing per se, does not serve any purpose, except providing unnecessary jobs at the cost of the industry or the taxpayer in general.

Licencing is permissible:

a) if you thereby can restrict entry into already fully utilized or over-exploited fishery. - Obvious drawbacks are potential discrimination between applicants and the possible exclusion of new blood into the industry. One can of course visualize that a full stop is placed at " an existing level " as regards the size of the fleet - the licencee then being able to dispose of his boat and licence to the highest bidder or his heirs. There are both advantages and drawbacs to such a system.

b) to facilitate inspection and adherance to certain set of rules f.inst. mesh size, undersized fish, quality of the catch in general etc. Where licencing exists here, these are the main reasons.

Resource taxation as a means to e able us to trod the golden path to achive the balance between the optimun yield of the fish stocks and the capacity of the fleet to exploit them - is not practised here. The difficulties involved seem to be unsurmountable apart from the desirability or not to apply laboratory technique, with uncertain results, to an industry of such an economic importance as the fishing industry is in this country.

Granted however, that ways and means have to be discovered to keep the fishing effort within reasonable limits in relation to the stocks, without having to resort to official rationing system.

It should be pointed out however, that the Icelandic fishing industry, being the most efficient one, is heavily taxed and has in fact provided the means for the last 70-80 years to build a relatively modern society with education, health care, roads, harbours etc.

In this sense we may refer to resource taxation.

There exist fishery agreements between Iceland and three countries - i.e. Belgium, The Faroe Islands and Norway. Generally speaking they are not reciprocal, except partly as regards the Faroe Islands.

Measures for the conservation and optimum utilization of Icelandic fisheries.

Following the extension in 1975 of the Icelandic fisheries limits to 200 nautical miles various measures have been taken to ensure the conservation and optimum utilization of the fisheries within those limits. In 1976 comprehensive legislation was adopted, Act No 81/1976 regarding Fisheries within the Fisheries Jurisdiction of Iceland, which, as amended, provides the basic framework for such measures. The Act empowers the Minister of Fisheries to promulgate regulations directed at conservation and management of the fisheries and in general has made possible more flexible and effective measures. The Act moreover restricted the areas within which fishing by bottom and midwater trawl is permitted. The penalties for infringement of regulations have also been made more severe.

The conservation and management measures which have been applied in recent years include the following:

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The permanently closed areas have been increased in size and new closed areas established where spawning takes place and where small fish are found. In addition, since 1976 a system has been in operation which provides for the closing for up to 7 days of given areas upon the recommendation of the Marine Research Institute, should its inspectors note a large proportion of small fish in given catches. This method has been applied frequentley every year and has resulted

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This year a total ban on cod fishing is for 150 days for stern trawlers and 35 days for other vessels. When cod fishing is prohibited it means that the cod catch must not be more than 15% of the total catch in each fishing trip. Also fishing with gill-nets have be prohibited especially durning spring and summertime.

Due to these measures we have been able to strengthen the cod stoch and the proposals from the Marine research Institute for T.A.C. on cod have increased every year.

Quotas

Quotas have been set in certain fisheries, e.g. in herring, shrimp and lobster, and regulations established to ensure the optimum utilization of such quotas (e.g. to ensure processing for human consumption and to minimize deterioration of catch prior to landing).

Fisheries regulations 1982.

Only a few stocks of fish, shellfish and crustacea are subject to catch quota regulations. Notably capelin, herring, scallops, lobster (Nephrops) and inshore shrimp.

Other important stocks are subject to annual catch target limitations and various management measures, which are to secure, that the total catch is contained within reasonable limits. The main stocks in this category are cod, haddock, plaice, Greenland halibut, catfish and saithe. It should however be emphasized, that the cod stock receives greater attention than the other stocks.

Some additional stocks usually, but not always, of less commercial value, are not regulated, although stock size estimates are regularly made. Most of these stocks are considered as bi-catches. A notable exception is the redfish stock - a common stock to Iceland East Greenland and the Faroe Islands. As an agreement on conservation and utilization of this stock has not been reached with the EEC, it is as yet unprotected. The total redfish catch in these areas last year was probably 130 thousand tons, far above the TAC of 85.000 tons recommended by ICES (International Council for the Exploration of the Sea).

With regard to catch limitations for 1982, only the stocks of cod, capelin and shrimp are so far affected - in the sense that the catch target for cod has been established at 450.000 metric tons - about equal to the 1981 actual catch.

For inshore shrimp the catch quotas for the period Oct. 1981 through May 1982 are 6.200 metric tons. There is a closed season for inshore shrimp during the summer. Decisions regarding the season 1982- 83, will not be taken until next summer.

The catch quota for the Icelandic capelin stock for the 1981-82 season was established at 700 thousand tons in July 1981 whereof 15% fell to Norway. As the Norwegians usually catch their share of this particular stock relatively early, before the Barent Sea season opens, they caught their entire quota. Icel. fishermen prefer to wait until the capelin has reached the highest possible product yield. In October last joint Icel. Norw. stock abundance estimates suggested that the capelin stock could not support a catch of 700 th. metric tons. Consequently it was decided to cut the Icelandic share drastically. At the time of writing it seems probable that the Icel. share of the quota will not be filled. A new stock abundance investigations are being made now. The results will not be known until later this month. So at the time of writing the aforementioned cut of the capelin quota is still valid.

Decisions on a quota for 1982-83 will not be taken until in the summer of this year.

Further complications arise due to the fact that part of this stock has in recent years migrated to the EEC fishery Zone of East Greenland. An agreement with the EEC has not yet been reached.

For shellfish (mainly Scallops) a catch quota is as yet not established. I assume that the total quota will be arround 12.000 tons.

The lobster season (Nephrops) lasts from late May to the beginning of Sept. each year. The catch quota has not yet been dicided. Most likely it will be arround 2.700 tons.

The herring season (Summer spawners) usually lasts from the beginning of Sept. through November each year. This may change if or when the Spring spawning stock revives. In 1981 the catch quota decided on was 42.000 tons. I assume the catch quota for this year might be established at 50.000 tons. The actual catch however might be influenced by marketing conditions. The Canadians are offering herring products at a price, that to me seems incredibly low (considering the cost of catching and processing). Secondly the lifting of a total ban on herring catches in the northern part of the North Sea does seem to affect the market.

There is a consensus in this country not to catch herring for processing into meal and oil, until the stocks have shown better signs

of recovery. It seems probable that the Summer spawning stock is near an optimum size limit.

As mentioned above catch target limitation has already been decided on for the cod stock. My guestimate is that for other commercially important demersal species the target will be as follows:

Haddock	65.000 metric tons
Saithe	65.000 metric tons
Greenland Halibut	17.000 metric tons
Catfish	13.000 metric tons
Plaice	10.000 metric tons.

15th January 1982.

Már Elísson

Table 4

Icelandic Management Measures in Effect

	Mesh Size	Fish Size	Area and Seasonal Closures	Quotas
Cod[1]	X	X	X	
Haddock	X	X	X	
Pollock	X	X	X	
Coal Fish	X		X	
Red Fish	X		X	
Herring		X	X	X
Prawn			X	X
Norway Lobster			X	X
Scallops			X	X
Capelin	X	X	X	X
Norway Pout	X		X	X
Pecten				X
Shrimp	X		X	X

[1] A total ban on cod fishing is for 150 days for stern trawlers and 35 days for other vessels. When cod fishing is prohibited it means that the cod catch cannot be more than 15% of the total catch in each fishing trip.

Source: Correspondence dated January 27, 1982
Mr. G. Thorsteinsson
Marine Research Institute

Comparison of United States and Icelandic Fishery Policies

Similarities The most prevalent similarity between the U.S. and Icelandic fishery policies is the fact that the policy of each nation is based on one piece of legislation, which directly relates to the 200 NM FCZ. Each legislation establishes a hierarchy in which overall authority is designated to a government official. In the development of each respective fishery policy, both the U.S. and Iceland made an effort to ensure public participation took place. The U.S. has provided for public participation through the Regional Councils and during public hearings which take place prior to the implementation of FMP's. Iceland provided for public participation prior to the enactment of their 1976 Act when public hearings were held in major fishing ports[55].

Another similarity which has not been previously mentioned is the management of recreational fisheries. To date neither country is actively involved in managing this fisheries.

Differences Although certain aspects of the fishery policies of the U.S. and Iceland are similar, a greater number of differences exist. First of all, the fisheries management hierarchy is much less complicated in Iceland

than the U.S. When decisions are made in Iceland they can be implemented immediately. The Minister of Fisheries decides the management policy of each fisheries and if revisions in that policy are to be made they are done so within days. As previously mentioned, Article 8 of the 1976 Act enables the Marine Research Institute to immediately prohibit specified fishing up to seven days in specified areas if there is an indication that a particular stock is being overfished. The final decision as to what measures are to be taken is made by the Minister of Fisheries within that seven day period.

The U.S. policy is much more ambiguous and depends on whether an FMP has been established or not. If an FMP has not been established the Secretary of Commerce has the authority to implement such a plan. If an FMP has been implemented and the plan did not include measures to be taken when unforeseen circumstances occur, the Secretary of Commerce can take emergency action: However, such action may not be extended for more than 90 days[56]. During that 90 day period it is up to the Regional Councils to ensure the FMP is properly amended. The shortest period that a Regional Council can implement an amendment is six months[57].

Iceland's fishery policy is also different from the U.S.'s policy in regards to what fisheries are to be managed.

Iceland's policy is to manage only those fisheries that are in danger of being overfished[58]. The U.S., however, requires the development of FMP's for all fisheries within the FCZ (MFCMA Title III, Section 302h,1). This procedure can be and is quite time consuming, especially if one considers that each FMP takes at least six months to implement.

Although the U.S. and Iceland encourage the development of fisheries and promote efficiency in the utilization of the fisheries resources (Iceland Legislation Article 1 / U.S. MFCMA Title III, Section 301a,5), the U.S. appears to have fallen short of this goal. The U.S. has not emphasized or encouraged fishermen to provide good quality fish to the processor. Iceland, on the other hand, has made a strong effort to ensure that fishermen provide good quality fish[59]. An example of this is Iceland's regulation requiring gill netters to haul their nets daily[60]. This regulation ensures the delivery of fresh fish to the processor. To date, Iceland receives the highest prices for their fish on the world market[61].

When referring to the FCZ, mention has primarily been directed to the outer extremes of the 200 NM FCZ established by both the U.S. and Iceland. A difference exists, however, with the inner limits of the FCZ which has made fisheries management for Iceland much less com-

plicated. Iceland's Minister of Fisheries has responsibility over all fisheries within the 200 NM FCZ including those fisheries within the internal waters of the island. In the U.S., the federal government only has direct management responsibility over those fisheries that exist between the 3 NM Territorial Sea and 200 NMs. The coastal state has authority over the fisheries within the 3 NM Territorial Sea including the internal waters. It would appear that this management scheme requires a great deal of coordination, especially if a fish stock exists both in state and federal waters. Stipulations have been provided in the MFCMA (Title III, Section 306) which authorizes the Secretary of Commerce to override state jurisdiction, but only under specific circumstances.

Another difference existing between the U.S. and Icelandic fishery policies can be considered the most fundamental difference between the two nations. The difference is the policy related to foreign fishing. In 1980, Iceland only allowed an approximate 14% of its fisheries to be harvested by foreign fishing vessels[62]. During the same period of time, the U.S. allowed an approximate 58% of its fisheries to be harvested by foreign fishing vessels[63]. This difference clearly indicates the great commitment Iceland has to its fisheries resources. It should be noted that since such a large portion of the U.S. fisheries is

harvested by foreign fishing vessels, the U.S. government can and has used this as a bargaining tool when dealing with foreign nations. The concept of "Fish and Chips"[64] is such an example in which a foreign nation in agreeing to reduce certain trade barriers would receive increased U.S. fisheries allocations. Other examples of fisheries allocations being used in international politics include the U.S.'s revocation of the U.S.S.R.'s fishing permit in 1980[65] in response to their invasion of Afghanistan, and the revocation of Poland's permit in 1981 in response to their government's incurment of martial law.

Comparison of United States and Icelandic Fisheries Management Techniques

Similarities Within the field of fisheries management, certain basic management techniques have been established. As has already been mentioned these include area and seasonal closures, gear restrictions, quotas, mesh size regulations, fish size regulations, and limited entry. To date, both the U.S. and Iceland have incorporated similar techniques to varying degrees, and have also utilized more than one technique for a particular fisheries, as seen in Tables 3 and 4. Another similarity in the management of fisheries between the U.S. and Iceland is the concept of determining annually the total amount of a particular fisheries that can be harvested without having a detrimental effect on the stock. The U.S. classifies this level as Optimum Sustainable Yield (OSY)[66], and Iceland classifies it as Total Allowable Catch (TAC)[67]. It should be noted, that since such a large portion of the U.S. fisheries is harvested by foreign fishing vessels, as mentioned in the previous section, the accuracy of the OSY is very critical and has a large impact on the domestic fisheries. Once the OSY is calculated a determination is made on how much of the fish can be harvested by the domestic fishermen. The difference between the OSY and the amount the domestic fishermen can harvest is the amount that can be harvested

by the foreign fishing vessels, Total Allowable Level of Foreign Fishing (TALFF)[68]. Iceland, on the other hand, does not have to be as concerned with the accuracy of the TAC, due to the fact that such a small portion of the fisheries is caught by foreign fishing vessels. If adjustments are needed, the government only has to deal with the domestic fishermen.

Differences As mentioned above, the management techniques utilized by the U.S. and Iceland are similar; however, a major difference exists as to the varying degrees they are used. In review of the various FMP's and PMP's implemented by the U.S., as seen in Table 3, there does not appear to exist any consistency in the management techniques utilized for the various fisheries. If one were to choose which technique was most commonly used, it would be quotas. It can, therefore, be concluded that the U.S. has emphasized management directed at controlling the total population of a fish stock. Iceland, on the other hand, has focused its fisheries management in a different direction which is controlling the composition of a fish stock. The primary means of management is the use of area and seasonal closures. Seasonal closures, as utilized by Iceland, may have the same effect as quotas in controlling total population. This is quite evident with Iceland's 1982 ban on cod fishing for 150 days for stern trawlers and 35 days

for other vessels[69]. Area and seasonal closures are primarily used to protect known spawning and nursing areas. Two other management techniques used heavily by Iceland are mesh size regulations and fish size regulations which also tie closely with controlling the composition of a particular fish stock. Quotas are used by Iceland, but only for those fisheries that have been severely overfished and require management methods that will directly relieve the pressure on the particular fish stock. As seen in Table 4, Iceland has only set quotas for herring, Norway lobster, prawn, scallops, capelin, Norway pout, pecten, and shrimp.

Due to these retulations we believe that our cod-stock can hardly been seriously over-fished. It is however over-exploited predominantly because of intensive trawling on immature fád.

Fish quality This ás a very difficult problem as the fish dies in the PA-netting. If the nets can be hauled every day the quality is fair to good. If the nets are hauled less frequently the quality óf of cuurse worse. In such cases the fish cannot be frozen. Some part will be salted or even dried for a stockfishmarket in Nigeria. In extreme cases the fish cannot been used at all.

The only regulation which is effective to solve this problem is the limitation of the amount of nets with which each vessel may catch as already mentioned. In addition the vessels may not have their net in the sea during easter and the fish would stay at least two days in the nets. Howeuur the fish quality has been improving in hhe last years as the vessel size gradually increases. The bigger ships are less dependent upon the weather.

Gear conflict The most frequent conflicts are between gill-netters and trawlers, in the past often foreign trawlers. The lack of knowledge of each other languages may explain this to some extent. We have however a flexible system of regulations to solve this problem in the way that each type of fishing gear has emme special areas where no other gear may be used. This does not prevent that the gill-netters may come in fánflicts with each other. Such conflicts seldom become serious. The boats simply haul the net fleets in the correct order.

Ghost nets Lost gillnets are sometimes called ghost nets. The fisher men take all care to prevent to loose their nets (and catch). The nets are uxpensive and so th the fish. If the fleet cannot been found it will been tried to pick ap up with a kind of anchor which is systematically twoed over the position where net fleet is expected. Such operations are often successful. In spite of all precaution nets get lost. I personally dont believe that the ghost nets continue to catch fish. Other opinions also exist. Here we also have some regulations. One of them obliges the fishermen to use

C.

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BOSTON, MASS.
WASHINGTON, D. C.

17 May 1978
Charles Sheldon

Mr. G. Thorsteinsson
Hafrannsoknastofnunin
Marine Research Institute
Skulagata 4
Reykjavik
Iceland

Dear Mr. Thorsteinsson:

Last winter I wrote you a long letter with many questions concerning the conservation techniques your country is using with respect to fisheries management. Your return to me was most helpful and I understand the complexity of the issue (I think) but must now respectfully ask several more questions of you.

As you know we have been experimenting here with management plans under extended jurisdiction that are new, untested, and subject to considerable legal interpretation and confusion. I reread your letter today because I was interested in several management areas you referred to but did not elaborate upon. I should also tell you that there are many people here in New England who feel strongly the need to examine closely the management systems of other nations rather than assuming the United States has the best and last answer - in fisheries I feel we represent a developing nation much of the time.

Concerning the groundfishery here in New England, a management plan developed by fishermen argued strongly for vessel quota allocations by vessel tonnage class, with annual quotas proportional to historical harvest. I do not wish to discuss this proposal with you at this time but would rather ask you several questions that have come up repeatedly when considering this plan and others:

1. You mention an overseer board of very active ex-fishermen. What do these people do, specifically? What is their authority and how is it granted to them? How are these people selected?

2. The rumor here is that now Iceland has adopted quotas and has also adopted a limited license (entry) system. Is this true? Your letter to me indicated what I thought to be a strong effort on your part to avoid establishment of quotas but rather to regulate on the basis of gear restrictions, area closures, and season closures. What prompted you to establish quotas if you have done so? And with respect to license systems and entry limitation - this can be fairly categorized as the hottest

HAFRANNSÓKNASTOFNUNIN

D.

F-181/78 - GTH/se 30/5/78

Mr. Charles Sheldon
Development Sciences Inc.
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Dear Mr. Sheldon,

Thank you for your letter from 17 May. I was glad to read that my first letter was "most helpful" for you and that convinces me that a visit to Iceland would be "most valuable".
I will do my best to answer your questions but I feel that each answer will lead to some new questions. This reminds me of several dragon legends where two heads appear for each one which is cut off. So after some more letters you might have a multiheaded monster to deal with. It will be easier to kill it in Iceland.

1. The inspectors measure fish length. If the fish is smaller than our minimal demands, for instance more than 40% of the cod smaller than 55 cm (by number) they inform us immediately.and we close an area as proposed by the inspector involved for a week. During that week we check ourthe area with one of our research vessels or with a commercial vessel with aninspector on board. The final decision then makes the ministry of fisheries.

In case of trawling with small meshed trawls (prawn, Norway pout, Nephrops etc.) we have an upper limit of small fish which may be killed for a certain quantity of "real catch". For instance for each 1000 kg of prawn some 100-2000 small fish will be the upper limit depending on whether it is 0 or I-group and cod or haddock. Then 3 herrings correspond to 1 haddock. Fortunately the small fish are much less abundant. These calculations are economical i.e. at the upper limit the prawn catch equals the loss in fish catch caused by prawn fishery. These calculations are certainly not so

The Pecten fishery is regulated by quotas for each sub-area. The intenest for this fishery has not been very great. Thus the boats most of time can catch without restrictions unless some areas could be closed. Frequently the capacity of the only processing factory worth mentioning is the only reducing factor.

All those quota regulations have been accepted by all people involved. In the most cases the best skippers will make the biggest catches. And this gives the best guarantee that the maximum substainable yield will be obtained and maintained for the benefit of all parties.

On all other species there are no quotas so far. Our institute has calculated the desirable quantities of some important species to be caught each year. However no quotas have been realized on these species (cod, haddock, coalfish, redfish, Greenland halibut inter alia). These fisheries are regulated by other methods (see 1. letter) which do not always prevent some overfishing.

The licence-system is complicated. Often there is a maximum boat size or horse power count. Which decide if the licence can be obtained. Purse seiners which participate in the capelin fishery are not permitted to catch herring too. The rules are very frequently altered depending on the situation for the time being. So I simply surrender, hence responsible for some new dragon heads.

3. There are no special restrictions for handliners and longliners. Sometimes however it may become necessary to have special areas for longliners and other for gillnetters in order to prevent gear conflicts.

The handliners are often small boats unable to fish very far from the coast. As they operate on shallow water they can release the undersized fish alive. Unfortunately they don't do so if they can somehow sell this fish.

The longliners usually don't operate on very shallow water near the coast simply because they don't get acceptable catches there. Certainly the length composition of the fish is sometimes poor.

parliament. These proposals were accepted with some alterations.

5. This question probably had been answered already to some extent. In some cases there is a plain single species management. In bottom trawling the catches are sometimes mixed even on the same fishing ground. Nevertheless most of the regulations are made to protect our most important fish stock the cod. Some species f.i. Greenland halibut and redfish live more or less separately from other species. So quotas on these species would be unproblematic. Other species, cod, haddock and saithe, often are available on the same grounds at the same time. Therefore quotas in this case could cause some difficulties.

In general our management is a great progress as compared with the uncontrolled fisheries by many nations as previously practised. We are all the time trying to improve our methods. Unfortunately the cod stock is nevertheless overexploited since there is no quota in use. All other restrictions do not suffice because the fishermen first of all want cod, the most expensive species (except some few less plentiful available).

Hoping that these informations may help you I am

Yours sincerely,

Gudni Thorsteinsson

E.

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BOSTON, MASS.
WASHINGTON, D. C.

September 6, 1978

Mr. Gudni Thorsteinsson
Hafrannsoknastofnunin
Marine Research Institute
Skulagata 4
Reykjavik
Iceland

Dear Mr. Thorsteinsson:

This is a long overdue letter of thanks to you for your long and most interesting responses to my letters of 23 January and 17 May 1978. I have been working on other projects over the summer and have managed to keep the many-headed dragon you have shown me at bay. For the moment I have no further questions of you, save one: has your country yet placed a quota on cod? We hear varying reports about cod quotas in Iceland, and I am not sure. Over here, you see, we have quotas on everything, or appear to, and yet you seem to have not placed a quota on your most prized fish -- cod. Do you feel a quota on cod is inevitable; if not, do you then feel that with other regulations you can conserve the stock? I guess I am asking you why you have no cod quota if cod are your most valuable fish.

I see I have more than one question after all, and maybe the dragon is crawling back into view.

My apologies for all these queries.

Sincerely,

Charles Sheldon

Charles Sheldon

CS:jbp

HAFRANNSÓKNASTOFNUNIN

F.

F-264/78-GÞ/kþ Sept.25.'78

Mr. Charles Sheldon
Debelopment Sciences Inc.
B.O.Box 144
Sagamore, Massachusetts 02561
(617) 888-0101
Washington, D.C.

Dear Mr. Sheldon,

Thank you for your letter from September 6. We don't have any quota on cod and there are no plans in that direction as far as I know. Our institute has for some years made proposals for cod quota since we think this would result in better utilization of the cod stock. The problem is how to divide the quota between the vessels and/or the fishing villages/towns and between different fishing gear. It is our opinion that a cod quota would be very important, some of us probabely would say inevitable.

We are now going into a poor cod period since the yearclasses from '74 and '75 are poor. The '76 yearclass is very big, that from '77 moderate and the '78 yearclass seams to be of a good average. For your information the yearclasses of '72 and '73 were good and have been heavily fished. If we take the cod 5-9 years old the different sizes of the yearclasses would not result in very differing annual catches. Now we take a too big part of the fish at the age of 4 and 5 with the consequence that the annual catches are poorer and more varying than necessary.

A quota system is a valueable step to solve the problem but it is not the whole solution. We must catch the fish older than we do now and we must catch cod the whole year because of the fishing industry. A quota system does not guarantee this.

Finally for your information we have in the last months closed (for good) some new areas for cod fishing.

Hoping that this helps keeping the dragon at bay for a while I am

Yours sincerely,

G. Thorsteinsson.

G.

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BOSTON, MASS.
WASHINGTON, D. C.

October 17, 1979

Mr. Gudni Thorsteinsson
Marine Research Institute
Skulagata 4
Reykjavik
Iceland

Dear Mr. Thorsteinsson:

A pleasure speaking with you this morning. This letter is to confirm my plans to travel to Iceland October 29, arriving October 30. Upon arrival, I shall telephone you. I very much appreciate your assistance regarding hotel reservations.

I have spoken with several people here who are directly involved with fisheries management for the waters off New England. Presently under consideration is a new management strategy based upon gear/area regulations and close cooperation with industry. I have received from these individuals many specific questions about your management system; briefly, how does it work, what has your management history been, and how successful has your system been concerning groundfish?

While I realize I cannot fully describe a technique you have developed for years on the basis of a short visit, I am hopeful I can speak with enough individuals to at least determine how many heads the dragon is likely to grow.

I look forward to this visit with great anticipation.

Sincerely,

Charles Sheldon

CS/ks

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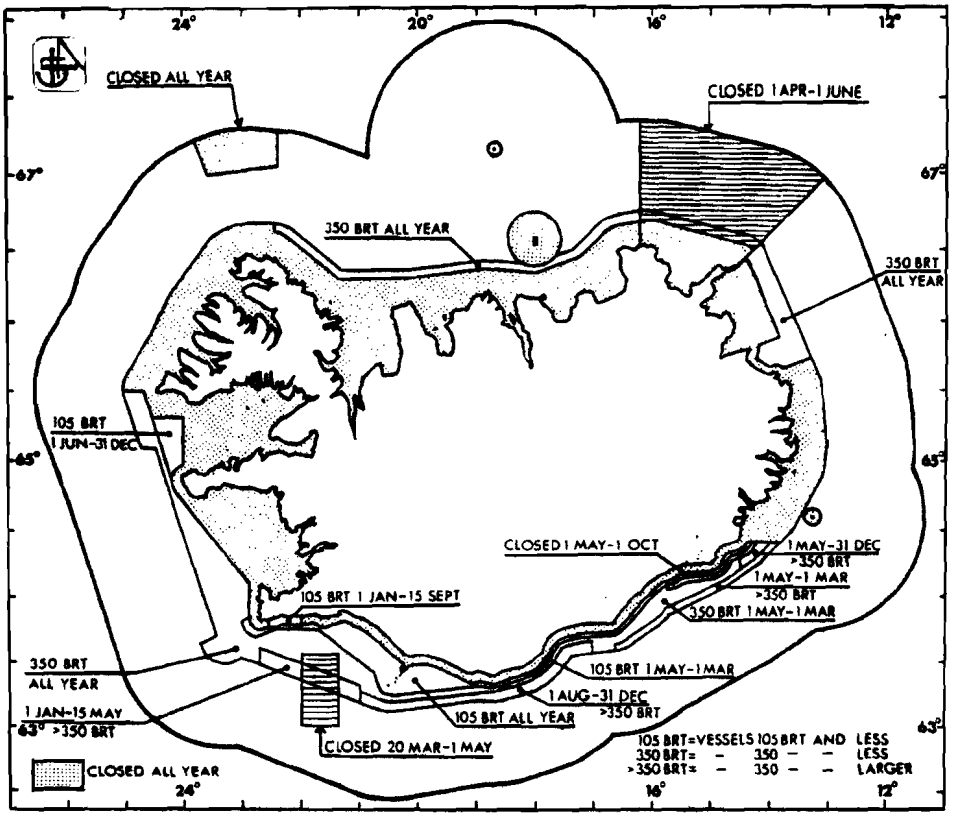
Appendix II



Areas and periods in which use of trawl is allowed by Icelandic vessels inside the fishery limit, according to law nr. 102 27 December 1973. This law is now being revised.

Appendix III

Correspondence dated February 23, 1982
Mr. Magnus Olafsson
Ministry of Fisheries