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Fisheries Management in the Northwest Atlantic: An Analysis of Canadian and American Policies

by Dawn Andrews

INTRODUCTION

In the past, fishermen considered the oceans' resources limitless. All nations, including Canada and the U.S., treated these fishing resources as common property; operating on a first come, first served basis and considering the ocean fisheries open resources with no need for management (common property approach). This mindset persisted internationally until World War II. After World War II, distant water fishing fleets with a tremendous capacity for catching and processing fish began appearing in the Northwest Atlantic. (Lamson, p.27.) These fleets with their large fishing capacities caused ocean resources in the Northwest Atlantic to diminish, giving the first sign of trouble.

A group of nations, including the U.S. and Canada, established the International Convention for the Northwest Atlantic Fisheries (ICNAF) in 1949, in an attempt to responsibly cooperate for resource protection, conservation and research. (Lamson, p.3.) However, the convention's lofty goals of protection, conservation and research failed due to its lack of regulatory measures and enforcement abilities. The Northwest Atlantic's valuable fishery resources needed stronger management policies to survive.

I. EVOLUTION OF FISHERIES MANAGEMENT

International management policies for fisheries have evolved from the common property concept. The concept of a commonly held, publicly owned resource allows free access and inspires open competition, rewarding people for individual effort. However, this free-for-all system, devoid of management, sets up the phenomenon known as the "Tragedy of the Commons." (Keen, p.4.)

The tragedy of the commons occurs when fish stocks decrease and prices increase, so that fishermen make the same amount of money from fewer fish. Fishermen then increase their efforts in order to catch the fewer available fish. Since the fishery resource is common property and the fishermen have no investment in its preservation, it collapses under the pressure of a first come, first served industry and is either depleted to unsustainable levels or destroyed.

Prior to the "new law of the sea," established at the United Nations Third Law of the Sea Conference (UNCLOS III)(discussed below), fisheries management evolved in two phases. The first phase of management consisted of maintaining the resource at a

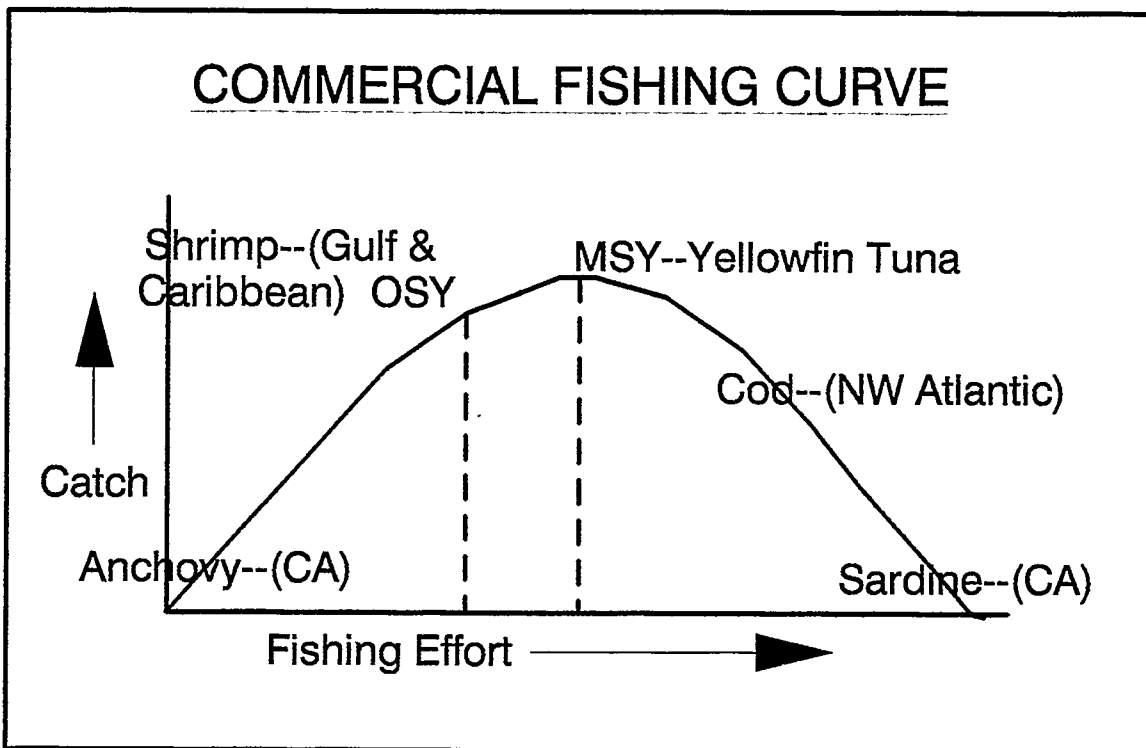
productivity level that would theoretically assure maximum catches. (Trodec, p.136.) That level is known as the maximum sustainable yield (MSY)(see graph). Various methods were used to assure MSY and to protect the resource: gear restrictions (minimum mesh size for fishing nets), timed or seasonal area closures, and recommended quotas for individual species. (Trodec, p.136.)

However, the first phase of fisheries management had several problems. First, the managers of the resource gave insufficient consideration to natural annual recruitment fluctuations for a population or species. (Trodec, p.136.) Recruitment fluctuations are yearly differences in the number of fish larvae which end up in a particular area, either by voluntary migration or by natural forces (currents). If a population experienced a down year with low recruitment levels, the predicted MSY would be too high and would actually be within the zone where the catch decreases with increased fishing effort. This could cause the

population to drop dramatically, reducing catches for future years. The Northwest Atlantic Cod and California Sardine illustrate this dilemma. (See graph.)

The optimum sustainable yield (OSY) of a population is a more realistic and effective measure of productivity levels to use in setting fishing quotas than MSY. As the "optimum" yield, it allows for large catches while protecting the resource from overfishing. Effort expended above OSY corresponds to little increase in catch. The OSY is very close to the MSY, where the curve of catch per unit effort has begun to flatten out. (See graph.) Hence, OSY allows the resource leeway for natural recruitment fluctuations while maximizing the fishermen's benefits computed under cost per unit effort (see graph).

Second, the first phase of fisheries management disregarded political and economic motives which were the true cause of the resource misuse. Politically, competition among participants, as nations, to increase or maintain their share of a limited resource causes



This graph illustrates the correlation between fishing effort and catch size. MSY, the apex of the curve, denotes the maximum fishing effort that can occur without overfishing and depleting stocks (assuming normal recruitment levels). The cod and sardine populations are dangerously low due to overfishing. California anchovies, conversely, are underfished. Shrimp are well managed as a fishery, in no danger from overfishing even in a low recruitment year, unlike the yellowfin tuna. The yellowfin tuna is currently fished at its MSY and a low recruitment year with the same fishing pressure applied as for typical years could severely damage the fishery. (Keen, p.6.)

resource misuse. (Troadec, p. 136.) Economically, there is a tendency for fishermen to overinvest in equipment in order to increase their individual share of a finite resource. The fishermen use their profits to buy larger boats, more expensive fishing gear and navigational aids, while the fish population remains the same size. This investment allows the fisherman to catch more fish in less time, but not to catch more fish total. Ultimately, this causes the complete dissipation of the "rent," or profit, from the resource. (Troadec, p.136.)

The second phase of fisheries management prior to UNCLOS III consisted of the first distributive measures (allocation of the resource) and the first attempts at controlling international competition. This phase saw countries involved in international fisheries sharing total allowable catches (TAC's). (Troadec, p.136.) While the TAC method could have addressed the political and economic causes of resource depletion, it failed to do so since countries were unwilling to regulate their fishing industries and no international enforcement avenues existed.

The UNCLOS III treaty was finalized in 1982; however, the treaty has not yet been ratified. Most countries have adopted certain provisions of UNCLOS III, but refuse to sign it for strategic reasons. This treaty institutes significant changes in coastal fisheries management. For example, many countries, including Canada and the U.S., declared a 200 mile exclusive economic zone (EEZ) adjacent to their coastlines. Each nation acquired sovereign rights to the fish within its 200 mile EEZ with a moral obligation (rather than a legal obligation) to ensure proper conservation and promote ultimate utilization. (Copes, p.232.) The EEZs have taken approximately ninety-five percent of the world's fishery resources out of the international commons and brought them under national control. (Keen, p.73.) While national control should make resource management much easier, neither Canada nor the U.S. has yet found a fully successful management strategy.

II. CANADA'S PROGRAM

A. Overview

Canada has three major fisheries in the north-west Atlantic: lobster, scallops and groundfish. (Nixon, 6/18/90.) A "fishery" is an industry based upon a distinct fish population. The mixed groundfish stock

consists of cod, flounder, haddock, pollock, redfish, hake, grenadier, wolffish and halibut. (Lamson, p.15.) The first five species are most important to the groundfish fishery, and most of these stock lie within Canada's 200 mile EEZ for at least part of their life cycle.

Inshore fisheries consist of small boats (less than 100 feet), and harbor or community-based small to intermediate-sized fish plants owned and operated by local fish buyers or fishermen's cooperatives. (Lamson, p.3.) Inshore fisheries tend to be based on seasonal activities limited by environmental conditions. The fishermen generally participate in a number of fisheries through the course of their work year, utilizing a variety of trap, net, and hook and line techniques. (Barrett, p.4.)

Canada originally maintained only a traditional inshore fishery. Canada began to participate in the offshore fishery alongside the foreign distant water fishing fleets in the mid 1960s. Canada's offshore fleet consists of a vertically integrated system of companies with large processing plants, supplied by vessels larger than 100 feet in length. (Hache, p.1.) These vessels operate farther offshore and are more efficient. The offshore fleet operates as a group of corporations while the inshore fishery is a disorganized group of individual fishermen.

The offshore fishery is unconstrained by environmental conditions, operates on a year round basis and has specialized volume harvesting techniques. (Barrett, p.4.) The effects of the intense fishing pressure offshore fisheries exerted became evident by the late 1960s and resulted in drastic reductions in fish stocks. Thus, from 1970-1974, ICNAF set TACs for all major groundfish and pelagic stocks, hoping to preserve them. However, this alone was not enough.

B. Regulatory Efforts

In 1973, Canada established a limited entry system through vessel licensing of both offshore trawlers and midshore groundfish vessels. (Lamson, p.27.) Limited entry through vessel licensing sets up a much needed "rights" structure in a fishery, giving some fishermen a "right" to the resource and an interest in its preservation. It is politically acceptable to fishermen because it ensures profits. It is also capable of reducing effort (overinvestment) in the fishery because the number of vessels will be calculated to ensure steady

profits. Thus, the fishermen won't need the best equipment to catch any fish to make a profit. (Waugh, p.135.)

However, limited entry through vessel licensing raises several new questions: how many licenses should be issued, who should receive licenses, and how should the licenses be transferred? In order to be effective, this type of regulation requires a method for decreasing the number of licenses (in case fish stocks drop), imposing additional gear restrictions, and imposing auxiliary regulations (quotas)(to further remove any incentives for overinvestment). Also, the need for flexibility in the inshore fishery makes licensing difficult, since fishermen must be able to switch from one fishery to another based on market conditions and available fish stocks. Despite its complications, however, licensing has the potential to decrease effort in the industry, the base cause of the resource depletion. (Waugh, p.136.)

In 1974, foreign competition, reduced catch rates and the collapse of the groundfish industry due to weak international markets caused the Canadian government to investigate ways of assisting the fishing industry. Protective measures already in place included quotas, seasonal closures and gear restrictions. As a result of the investigation, Canada introduced new regulatory measures in 1976, including stringent licensing and limited entry regimes. Finding international regulation too difficult and fishery resources rapidly dwindling, Canada declared a 200 mile EEZ on January 1, 1977.

In the late 1970s, Canada divided its Atlantic fisheries management region into three subdivisions: the Gulf Region, the Newfoundland Region and the Scotia-Fundy Region. (Lamson, p.9.) One general policy could not be found to sustain the fishing communities of all three regions. Each region fell under the direction of a Regional Director General. The three directors formed the Atlantic Directors General Committee. This committee was responsible for improving inshore fisheries management by responding to local industry concerns and interests. Internal restructuring of the fisheries management program grew from efforts to decentralize decision-making processes to better meet the needs of specific areas within the Atlantic Provinces. (Lamson, p.9.)

The Canadian government still regulated the offshore fishery, and established enterprise allocations

(EAs) for vessels greater than 100 feet in length in 1982. EAs are species by species quotas allocated to specific offshore enterprises which are intended to give the companies an interest in maintaining the resource. A company can do anything it wants with its EA, such as trade it or sell it to another company. Due to its success, in 1989 the EA program for vessels greater than 100 feet (offshore fishery) was extended for another five years. An EA program for vessels 65-100 feet in length began in the offshore fishery in 1988, along with a segregation of vessels in the inshore fishery into two classes, 45-64 feet and less than 45 feet.

The government passed new restrictive vessel replacement guidelines in 1982 as well. (Hache, p.11.) If vessels increased their individual capacities, the total number of vessels allowed would decrease to maintain the balance of fishing effort.

That year also saw the U.S.-Canadian boundary dispute (over the highly productive fishing zone between New England and the Maritime Provinces) submitted to the World Court in The Hague, Netherlands. The World Court decision, known as the Hague Line, essentially divides the area in half, splitting the property rights of a highly migratory resource.

C. Economic Value

More than 1/4 of the 2.1 million residents of the Atlantic Provinces (the Maritime Provinces and Newfoundland) live in fishing communities, both inshore and offshore, with populations less than 10,000 people. (Hache, p.1.) At least half of these communities have essentially single sector economies, with fishing and fish processing plant employment comprising thirty percent or more of the labor force. (Barrett, p.2.) While fishing and fish processing make up a minuscule part of Canada's national economy, the industry contributes six percent of Nova Scotia's economy, the sixth largest contributor. (Lamson, 8/17/90.)

The traditional inshore fishery has long served as an employer of last resort in the Atlantic Provinces, a region seriously deficient in job opportunities. (Copes, p.225.) Because of job shortages, the labor force far exceeds the industry's labor needs. Thus, the federal and provincial governments have long assisted inshore fishermen by subsidizing their operations and supplementing their incomes. (Copes, p.225.)

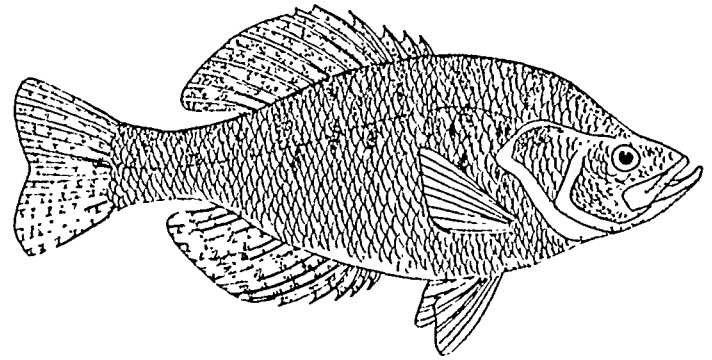
Canadian fisheries management policy has attempted to address these socio-economic problems. (Lipton, p.4.) While the government supports the inshore fishery with large subsidies to maintain jobs and traditions, it prefers the offshore fishery for management purposes and supports it with grants. A few large corporations are much easier to manage than many disorganized, independent fishermen.

Three objectives guided Canada's policy for the northwest Atlantic fishery in the 1980s: (1) the industry should be economically viable, (2) employment in the industry should be maximized subject to the condition that those employed receive a reasonable income, and (3) the industry should be Canadianized as much as possible. (Hache, p.9.) Current management policies restrain excess fishing capacity by setting low trip limits and seasonal quotas, by closing specific areas and shortening seasons, and by establishing license requirements. (Hache, p.9.) While these procedures do restrain the level of fishing pressure, the most efficient management solution would be preventing initial overinvestment.

The Scotia-Fundy Groundfish Task Force, formed in 1989 to critically analyze the strengths and weaknesses of existing management procedures determined three qualities desired from a management policy. These qualities were minimal intervention, maximum overall returns, and ensured benefits distributed equitably to various fleet and processing sectors and participants. The task force felt that Canadian management efforts had been minimally successful, partially because too much emphasis had been placed on conservation and preservation of fish stocks rather than on socio-economic concerns. (Hache, p.65.) Either way, management should promote ultimate utilization of the resource.

D. Foreign Fleet Management

Canada occasionally allows foreign nations to fish for a particular resource within its EEZ. However, this is only permitted when the foreign fleet will not interfere with Canadian fishing. When foreign nations are permitted to fish in Canadian waters, the problem of bycatch (unauthorized fish caught along with the authorized fish) arises. The controlling (home) nation may choose not to allow the foreign ship to keep the bycatch, since this would promote more "accidental"



bycatch. The two options then are to throw the illegal fish away or to sell the catch to the home nation. The first option wastes an already endangered resource. The second option encourages "accidental" bycatch and minimizes the home country's benefits from allowing the foreign vessel to fish for the resource. Canada has not yet found a satisfactory way to deal with the bycatch problem.

Canada does derive some benefits from granting fishing privileges to foreign nations. These include money used to offset fisheries management costs; access for Canadian fish products on foreign markets; and increased use of Canadian ports, ship repair facilities, and chandlery services by foreign vessels. (Lackey, p.333.)

III. U.S. PROGRAM

A. Historical Approach

Even though the U.S. and Canada share a common boundary and a valuable fishery resource, their management strategies differ considerably. The U.S. northwest Atlantic fisheries management policy still preserves the concept of an open resource, with no license requirements or private property rights. Historically, U.S. regulations were based on biological criteria, protecting fish before they reached harvestable size by setting minimum mesh net sizes, minimum fish sizes and by closing off certain areas to fishing. (Lipton, p.8.) However, that approach failed to preserve the fish stocks.

In the 1970s, the U.S. government began exploring ways to improve its struggling and inefficient management program. This led to the enactment of the Magnusen Fisheries Conservation and Management Act (Act) in 1976. (Finch, p.144.) The Act establishes eight regional councils, each composed of state fisher-

ies directors, U.S. Coast Guard officers, government agents, biologists, fishermen and processors. (Finch, p.144.) The Act empowers these councils to establish regional management plans to optimize yield and preserve dwindling fish stocks. The councils have authority to set catch quotas and seasonal closures, to regulate fishing methods and gear restrictions and to permanently close spawning grounds. The Act also provides management councils with research results. (Finch, p.144.)

Having various interests represented on the council often facilitates communication between those enacting policies and those implementing them. However, this also creates conflicts within the council. Fisheries directors and biologists generally favor stricter regulations, while fishermen and processors vehemently oppose them. Consequently, the councils often are incapable of passing the strict regulations needed for effective long-term management.

B. Management Problems

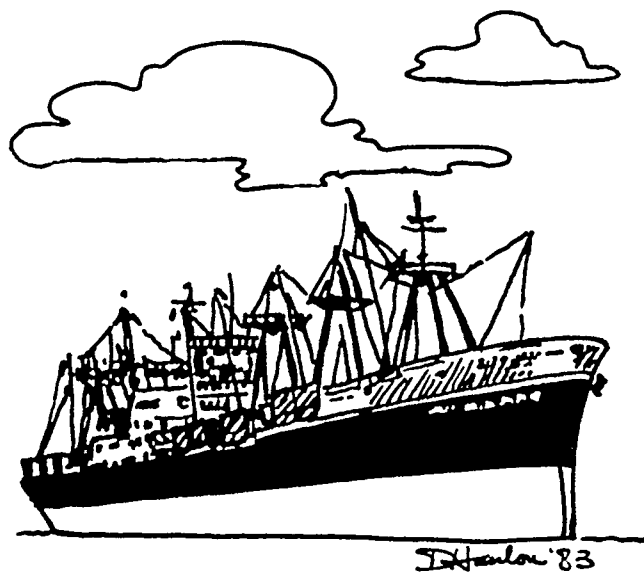
Additional problems plague U.S. fisheries management efforts. Lack of enforcement presents the single largest problem. The U.S. Coast Guard bears primary responsibility for enforcing regulations that apply to foreign fishing fleets. The National Marine Fisheries Service oversees domestic compliance. (Finch, p.149.) The split in authority makes enforcement efforts difficult to coordinate. When that difficulty is combined with the Coast Guard's focus on stopping the drug trade, the result is that minimal resources are left

for enforcing fishing regulations. (Lipton, p.9.) Without enforcement capabilities, violations by fishermen such as circumventing mesh size minimums with inserts (netting with holes smaller than legal size that can be placed inside nets) and ignoring closed area limitations go unchecked. (Finch, p.144.)

The U.S. management program also needs to improve its research data. More accurate data on recruitment (young fish brought to an area by currents), growth, mortality, and migration patterns would improve computer models' abilities to predict fish stock trends. Management councils also should switch to a multi-species management system, relying on total biomass rather than individual species numbers. This system would accommodate species that interact and school with other species; currently these interactions are either discounted or overlooked. (Lackey, p.344.) When species interact with each other, overfishing one species can harm another species: fish that school together are caught together. Often, the quota is for one species but not another. Consequently, fishermen throw overboard the fish that exceed the quota to avoid penalties such as fines. This wastes the resource.

C. Socio-Economic Concerns

Unlike Canada, U.S. fishery management policies do not address socio-economic concerns. This probably stems from the American free market philosophy which pervades American ideas. Many people strongly oppose any sort of limited entry restrictions or licensing systems as being fundamentally violative of

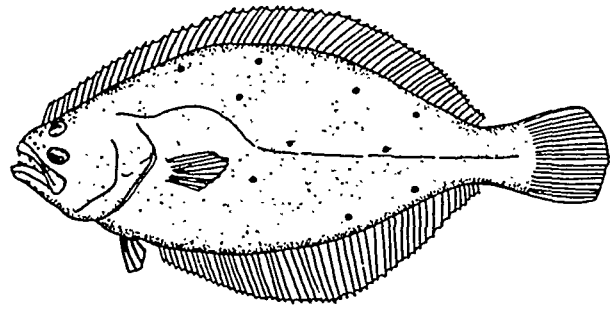


the Constitution and the basic rights of American citizens to choose a lawful occupation. Also, Americans are more apt to fight regulations which restrict previously unrestricted rights. The New England fishing industry makes up only a small part of the national economy, but it is an important source of jobs and income to the region. Limiting entry for the industry would wipe out jobs, and for many people, a way of life. Thus far, the industry has effectively prevented legislation that would restrict its access to the resource. The fishing industry may be small, but it has a strong voice.

IV. CURRENT DEVELOPMENTS

U.S. and Canadian fishing industries are interwoven, both in terms of sharing a migratory resource and in international trade. The U.S. imports eighty percent of its groundfish from Canada. (Terkla, 6/13/90.) Canada catches four times the amount of fish caught by U.S. fishermen. Overall, ninety percent of Canadian frozen fish exports go to the U.S. (Terkla, 6/13/90.) Until the early 1980s, the U.S. imported all frozen fish from Canada, but caught its own fresh fish. Since the 1980s there has been a surge of fresh fish imports from Canada as well. (Terkla, 6/13/90.) Canadian fish imports, fresh and frozen, tend to be more reliable in bulk than U.S. suppliers since the eight largest processing firms in Atlantic Canada merged into two, National Sea Products based in Nova Scotia and Fisheries Products International based in Newfoundland. (Lipton, p.5.) These two processors each handle a larger volume of fish than any of the small U.S. processors. Thus, the Canadian processors have the ability to guarantee regular shipments to supermarkets and other bulk purchasers. (Terkla, 6/13/90.)

U.S. fishermen sought and won countervailing trade duties against Canadian fishermen in response to an unfair competitive advantage created by the Canadian government's subsidies to the industry. However, the trade duties were not the victory they originally seemed to be. Canada had been shipping whole frozen fish to American processors in New England, since whole fish had no tariffs. Sending whole fish to New England for processing was cheaper than processing it in Canada and then paying tariffs on processed fish. The result of the U.S. "victory" over unfair advantages is that the Canadian government must now pay tariffs



on whole frozen fish exported to the U.S. Since it is no longer cheaper to use American processing plants, Canada processes its own fish and American processors lose business. The tariffs also increase fish prices which may lower demand, further harming the industry. (Lipton, p.5.)

In December, 1989, a conference was held in Portland, ME to address problems in the North Atlantic fishery. Representatives were sent from New Hampshire, Maine, Massachusetts, Nova Scotia and New Brunswick. This conference led to an agreement establishing the Council of the Marine Environment. The Council is not part of any U.S. or Canadian federal program. It will discuss fishery problems and act to maintain ecological balance, monitor waste entering the Gulf of Maine, regulate territorial use affecting the Gulf of Maine, and improve management programs. The Council aims to increase public awareness and channel public involvement in both countries where it can do the most good. The Council's biggest problem is that it does not have the capacity to join in legally binding agreements; only the federal governments (U.S. State Department and the Canadian External Affairs Department) can do that. However, the Council hopes to bring about change through public involvement rather than through legal channels. (Hughes, 6/22/90.)

CONCLUSION

The U.S. and Canada initiate fishery management strategies, independent of each other. This is a short-sighted strategy. These two countries must pursue discussions to develop compatible fishing approaches, especially on Georges Bank, the highly productive fishery that the two countries share. They also should adopt measures to ensure compliance with fishing regulations, such as adopting similar gear restrictions, quotas, or penalties. (Hache, p.78.) The Canadian government must increase the involvement

of its fishermen, who currently have no voice in management decisions. The fishermen also need information as to how and why their fishery is managed the way it is. (Hache, p.76.) The U.S. must expand its enforcement efforts and should halt overinvestment through a limited entry system. Both countries could introduce larger minimum mesh net sizes, encourage and support development of underutilized fish resources, and increase penalties for violating regulations.

Independent management efforts may be able to save the fisheries resource of the northwest Atlantic, but combined U.S. and Canadian efforts have a better chance of succeeding. We know that the oceans are not an indestructible resource eternally able to rebound from our exploitive tendencies. As with any other valuable resource, the oceans must be properly managed.

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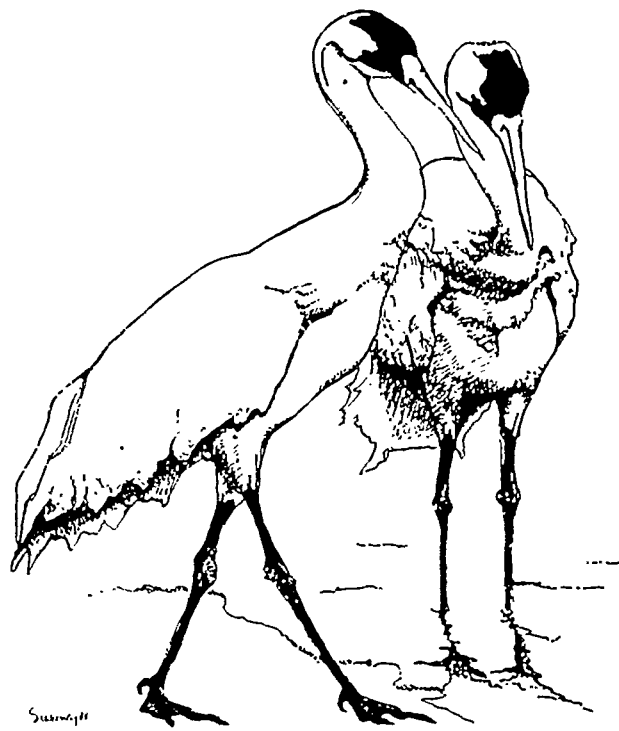
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