Regulation of Commercial Salmon Fishing in Southern New Brunswick

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ABSTRACT Since the 1970s government regulation of the fisheries in New Brunswick has become increasingly restrictive with limited entry into some fisheries. A ban on commercial salmon fishing began in 1972, was lifted in 1981 and resumed in 1984. At issue is not only the effect of limited entry on fish stocks but more significantly 1) the friction between fishermen and government, 2) the effects on the fishing communities, and 3) the reactions of commercial salmon fishermen to the regulations which have favored competing interests.

Introduction

Salmon fishing in New Brunswick's Bay of Fundy has changed from an open exploitation of a common property resource to restricted exploitation of a resource wholly managed by the state. Restrictive legislation concerning salmon is more than two centuries old, and while late nineteenth century laws were well devised for the resource, enforcement was widely described as "useless" (Dunfield 1985:122-24; Perley 1852). The twentieth century has seen greater pressure for enforcement. Particularly since Gordon's paper on common property in fisheries (1954) greater state control has characterized the salmon fishery. While Gordon's paper sparked wide debate on common property fisheries, the focus has been on economic models which assume fishermen want unlimited access to fish (see Copes 1977:233; Crutchfield 1979:743; Fraser 1979:755; Scott 1979:728). Increasingly, however, the forms of intervention based on such economic assumptions are debated by anthropologists (see especially McCay and Acheson 1987). We are suggesting that the question is not how to prevent fishermen from catching "every last salmon," when in the past they have controlled that themselves. When government controls access there are still the questions of how many fish should be allowed to escape for biological reproduction, who gets the limited amount of fish, and what happens when the catch allocation is unequally distributed. The other two, and especially the third one, will be the focus of this paper.

Regulation of fisheries may be seen in two aspects. On the one hand are fishermen's "rights to fish," established through historical practice. In some sense the fishermen's rights are over a particular territory, often the shoreline near their community. These territorial use rights in fisheries, or TURFs, are the logical opposite of open access common property (Christy 1982:2-3), since fishermen have identified a *site* at which they fish. Christy suggests the significant aspect of the TURF is its *value*, a value which can be increased through agreement among owners of similar TURFs. Territorial use rights in water are more difficult to define than property on land, foremost because the stock is mobile, i.e., it may be intercepted elsewhere, and it is difficult to detect. A TURF is analogous to a property right, which may be defined as "a constellation of highly complex adjustments of entitlements and expectations" (Carmichael, cited in Christy 1982:3). Rights to transfer, to extract benefits, to exclude others, to remain free of nuisances or pollutants, and to lease may also be included in marine enviromental property. As Pinkerton (1987) suggests, this right "bundle" is ambiguous in the extreme for fisheries because of claims made by the state over total ownership and counter-claims from other users harvesting the resource. For salmon originating in New Brunswick rivers, TURFs are organized in three large marine areas: off West Greenland, around Newfoundland, and in New Brunswick's rivers and near shore. Jurisdiction must be understood in light of these various claims to the salmon.

On the other hand are various forms of intervention. Under Canadian law the state has the responsibility to ensure that the resource is maintained, which is done principally by restricting fishing rights. In the Bay of Fundy, government has limited access to salmon by reducing:

1 the number of fishermen by limited licensing,
2 the number of fish caught by imposing quotes,
3 the fishing effort by closing seasons and regulating gear (lengths and mesh sizes of nets).

Limiting entry is a frequently used management tool, having been first applied in Atlantic Canada to lobstering in 1967. Since then, other fisheries have been similarly affected. In 1981 a study was completed by Levelton on the objectives of and rationale for licensing before discussing the practical elements and issues of licensing for limiting entry.[1] His conclusion that limited entry into the fisheries was necessary for their viability has been endorsed by governments throughout the 1980s. In the Bay of Fundy variations of all three types of limitation have been implemented, culminating in 1972 with a total ban on commercial salmon fishing. With this ban, Fundy fishermen found themselves in absolute opposition to government policy.

Partly in response to fishermen's assertions of their rights, governments have attempted other forms of management. Kearney (1984) has shown in his study of the Bay of Fundy herring fishery that co-management, a recommendation of a 1976 policy paper (Canada, Department of the Environment 1976), failed to achieve its goals, and was later abandoned by the Kirby Task Force (Canada 1983). In the interim, numerous committees were established to advise government on the fish stocks, and in the case of salmon local committees of all users acknowledged to have TURFs were even supposed to allocate the catch. However, fishermen complained that their advice was rarely followed. Management plans designed to help fish stocks and the fishing industry have often not improved conditions for either. Fishermen complain when catch reduction plans are introduced even for a short term (Acheson 1976:17-20), that their incomes are reduced and the stock does not increase. In Atlantic Canada fishermen have

even burned fisheries patrol boats (*Globe and Mail*, 12 May 1983; Grady and Sacouman 1984), although their normal means of protest are confined to letter writing and angry confrontations with officials at meetings. But even when the fishermen are in fundamental agreement with conservationist measures, it is often the *manner* in which policies are formulated and implemented that gives rise to dispute. In many cases, fishing rights have been allocated unequally in response to political pressure (Acheson 1981:302-03, Antler and Faris 1979, Sinclair 1983, 1987). As we shall argue this has happened in New Brunswick's salmon fishery. Briefly, the New Brunswick commercial fishery was banned and the native Indian fishery subjected to controls while the sports and Newfoundland commercial fisheries were allowed not merely to continue but to *increase*

It should be noted that neither the state nor the local users press their claims and/or take action until the resource declines drastically. When that happens the state focuses on bureaucratic-rational means to protect and enhance the remaining stock, whereas the fishermen restrict themselves by switching to alternative fisheries or land based work. On one side is a codified legal structure and on the other is an informal territorial use right. When limits are placed on fishing by a bureaucracy, the central measure is between ends and means in the best of circumstances – at least some of the goods must be delivered (Mikalsen 1985). Quite the opposite may happen. Regulation can intensify effort and/or capital leading to overall stock reduction unless the state allocates stinted landing rights (individual catch quotas; see Langdon 1982 for an example of this in the Alaskan salmon fishery).

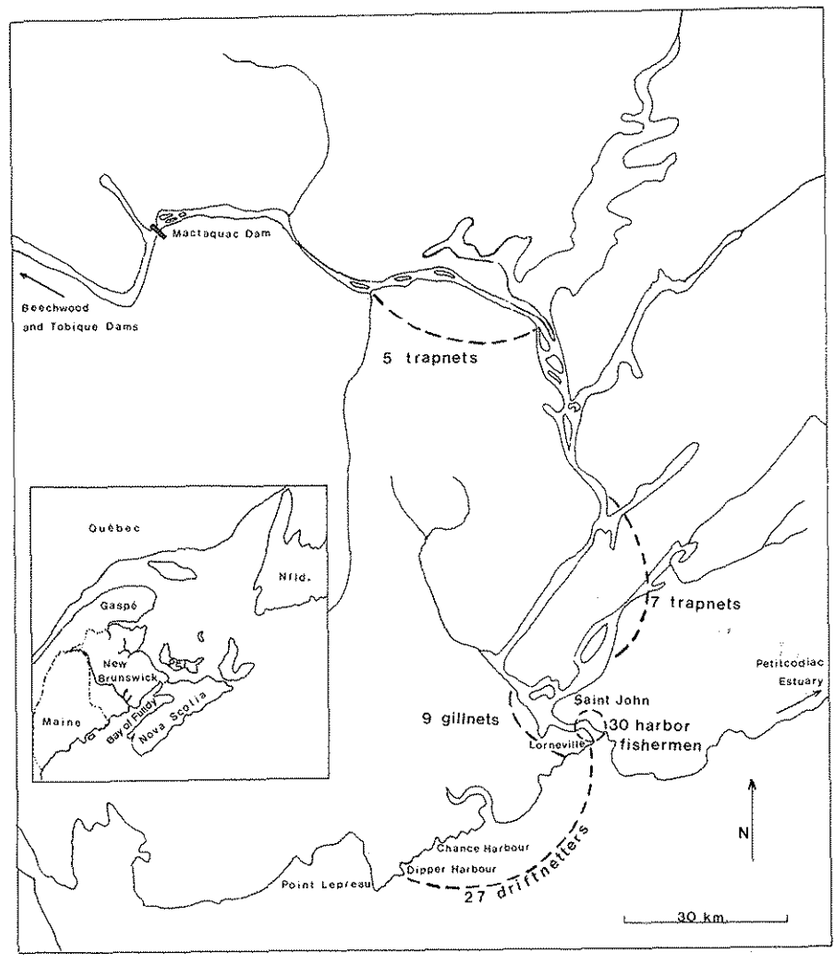
Since 1981 when the nine year ban on commercial salmon fishing in New Brunswick was partially lifted, we have examined the commercial fishermen's interests and their increasingly vocal opposition to management policies. Our interest was stimulated by the media reports which suggested that the sports fishery was being favoured.[2] Because we did not believe that the problems in the salmon fishery was one of a scarce resource increasingly being sought by too many local fishermen, the common property issue was not central to our study. Instead, we studied the local responses to the implementations of government policy and the changes those policies initiated in two closely related fishing communities in southern New Brunswick.

The Fishing Communities of Chance Harbour and Dipper Harbour

Chance Harbour and Dipper Harbour are located between Saint John and Point Lepreau (see Map), where Loyalists built homes along small bays and gravel beaches in the late eighteenth century (Thompson 1978). The majority of these settlers fished for a living, in part because there was very little opportunity for farming, the soil being unsuited for crops except along the western edge of Point Lepreau. At first, fish were landed and processed by family members on their own beaches. Later there was some consolidation around the two harbours where family-owned jetties were built. Dipper Harbour, being closer to many herring weirs, also had a herring processing plant (Wilbur and Wentworth

1986:28), whereas in Chance Harbour buildings were more dispersed and the fishermen were more likely to pursue salmon for sale in Saint John, some 30 kilometres distance.

Despite evidence of a seafaring background, the first settlers were isolated and marriage within the community was the rule. Several of the women who did marry-in taught in the one-room public schools, and they came from other fishing communities in New Brunswick and Nova Scotia, i.e., just across the Bay of Fundy and accessible by regular ferry service to Saint John. Over the years there were many cousin marriages, and in one extreme case three brothers mar-



Saint John River System

ried three sisters. As a result of much overlapping of consanguineal and affinal ties, one can trace a kin tie in several different ways. The present fishermen were born in one or other of the two communities, as were their fathers, and four surnames predominate today. Interaction among extended family members is not particularly strong but within the nuclear family there is considerable cooperation. While men normally begin fishing on their father's boats, sons fish on their own after their mid-twenties. Some of the older fishermen had their own boats in their mid-teens. Brothers often cooperate, cousins less so. A cousin might not even be identified as such, partly because everybody is so closely and complexly related (a cousin might be a brother-in-law, for example). Residents recognize kinship only when such ties are reinforced by mutual assistance, such as in lending gear or helping load traps and catches at the wharf.

In the past women made and mended the nets as well as helping with the preparing and marketing of the fish, but they did not go fishing. After the catch was returned to the jetty it was cleaned and salted and then sometimes rowed to Saint John for sale. Since the 1950s women have stopped handling the fish and only visit the wharves on special occasions such as opening day of the fall lobster season, or when salmon were brought in after a night drift. Most women still provide support by making lobster trap heads, keeping books or taking ship-to-shore radio messages in addition to their domestic work, but their direct involvement in fishing has been reduced.

As the men increasingly fished throughout the Bay of Fundy or even the offshore banks south of Grand Manan, bigger boats were constructed. Local boat builders could no longer meet the demand and quality became paramount as fishing took place further offshore. As the Cape Island boat (a shallow draft inboard motor boat of 25-40 feet), became popular during the early 1960s fishermen went to builders along the Nova Scotia shore.

By the 1960s public wharves were built in both harbours leading to greater residential concentration. The recent construction of a concrete wharf and breakwater at Dipper Harbour, complete with gasoline pump, further made this community the central focus of the local economy. Even before the new wharf was built the fishermen were shifting their boats to Dipper, where there were two local fish buyers, a lobster pound, and a seasonal fish market and restaurant. Dipper Harbour, being close to Point Lepreau, the site of New Brunswick Power's nuclear generating station, was inundated with people during the late 1970s and early 1980s as the nuclear plant was constructed.

Centralization around the two wharves changed settlement patterns and might have encouraged community solidarity for a while as public schools and churches were established in both Chance and Dipper Harbour. During the 1960s, however, the provincial government introduced an equal opportunities program in education leading to consolidated school districts (see Stanley 1984). Since then children have been bussed to a larger school near Point Lepreau until grade six, after which they travel up to 40 kilometres to Saint John. Saint John is now the market, educational and entertainment centre for the people of Chance Harbour and Dipper Harbour. The only local activity which brings the

people together and gives them a sense of unity is fishing, and while wharves are focal points for men, women have no public arena outside the church, which split into several denominations during the 1960s, in some cases dividing families amidst much acrimony. Despite this recognized decline in community activity, and even though young men find it increasingly difficult to obtain a sufficient number of fishing licences to allow them to build a house and feed a family, many people want to continue living in these communities.

Greater land mobility has affected fishermen's choice of residence as well as their choice of wharf. The salmon/herring division is no longer reflected in the current distribution of licences (see Table 1), although Chance Harbour is still thought of locally as the salmon centre. Until recently, fishermen needed only a general fishing licence, i.e., no gear/species licence was required. Depending on their resources and initiative, fishermen chose their own way, some liking day work and the security of lobstering, others prefering night drifting for salmon or seining and the quick return garnered by a larger investment in gear. Fishermen would not always pursue the same fish, salmon in particular having cycles dictating a variable effort. Barring external interference, including access to the fish by others and with little or no regulation by government, fishermen adjusted their effort to what was available. In other words, the community essentially regulated itself. Fishermen continue to value the skills and strength required for fishing which they view as individualistic and competitive. One fisherman said: "As soon as I go around the end of that wharf, I'm going to try to catch that fish before the next guy can." On the other hand, they recognize that government regulation now greatly limits their choices as well as community autonomy.

Fishing in Chance Harbour and Dipper Harbour in the 1980s

When we did our initial field work in 1981, 27 boats were anchored at both wharves and, with the exception of two outboard motor skiffs, all were Cape Islander style boats between 35 and 45 feet in length. Each boat was owner-operated and apart from one joint father-son lobster licence, most fishermen worked alone. Some had share operations with sons and nephews, a few with unrelated men for a particular type of fishing. These part time workers had casual jobs elsewhere and looked upon fishing as a chance for big money in a short time. Should 100 tonnes of herring strike a seine operation, for example, the sharemen would earn between $1,500 and $2,000. This might happen in the first week of fishing or it might never happen: the trip is then rationalized. Fishermen say "That's the way it goes" and "It was a pleasant time on the water." Some money passes hands so as to encourage a return to fishing when the herring are more plentiful.

In Chance Harbour, the community we lived in and studied most closely, fishing provided the primary source of income for 15 of the 47 permanent households and accounted indirectly for the support of others (see Table 2). These latter included the Fisheries Protection and Community Service Officers, a few widows of fishermen and several part time or retired fishermen. In total, 25 or

Table 1. *Licences Held by Chance and Dipper Fishermen*

Fisherman	lobster	herring	groundfish	salmon	scallop	other
Chance Harbour Licences						
1	x	x		x		
2	x		x		x	
3	x	x		x	x	
4	x		x			
5	x		x			x
6	x	x	x	x	x	
7	x	x	x	x		
8	x	x	x			
9	x	x				
10	x	x		x	x	
11	x	x	x			
12	x	x		x		
13	x		x		x	
14	x	x				
15	x		x			
16	x		x			
17	x					
18	x					
19	x					
Dipper Harbour Licences						
1	x	x	x	x	x	
2	x		x	x		
3	x	x	x	x		x
4	x					
5	x					
6	x					
7	x			x		
8	x	x				
Total	27	13	13	10	6	2

just over half of Chance Harbour households were supported by fishing. Dipper Harbour has only three fishing households, being the principal residence of Lepreau workers.[3] The harbour itself is used by fishermen from Chance Harbour as well as fishermen from the western side of Lepreau, providing a regional more than a community focus.

Table 2. *Chance Harbour Household Incomes by Source*

Fish Production	Fish Related	Non-fish Related	Total Households
15	10	22	47
(31.9%)	(21.3%)	(46.8%)	(100%)

Because high tides inhibit ice formation, the Bay of Fundy can be fished year round and several commercially exploited fish species inhabit the Bay in different seasons (see Figure 1). Seasonal availability of these species and government regulations for closed seasons determine the yearly round. Early in the year, particularly in January and February, cold and stormy weather usually reduces the fishing effort, which is for cod. Beginning in April, lobster appear and their numbers increase very gradually until July, when they begin to moult and cannot be trapped. By mid-June the fishermen traditionally began driftnetting for salmon, the run being from mid-June to late July. The most common summer fishery after the salmon season is for herring, which are taken both in weirs and by shut-off seine nets. In November and December fishermen set their lobster traps again. Scallops are relatively unimportanmt despite their year round availability, being fished mainly when other species are not abundant. Basically, fish are a very rich resource in the Bay of Fundy, weather and government regulations permitting.

Profile of Opportunities

Costs

To be a fisherman one must own a boat, a truck, fishing gear and at least a lobster licence. All of the fishermen in the study have lobster licences and this is the most significant fishery in terms of effort, cost and income. Lobster is a consistent provider. Since the buy-back program for lobster licences was begun in 1972 these licences have been sold privately for the same amount as the government will pay or $5,000. Retiring fishermen are in a seller's market, and so can sell their licences conditional on the purchase of their boats, which are often old. Such a boat, before the repairs required to make it seaworthy, may cost an additional $5,000. The cost of materials for a set of wooden traps is about $6,000. Each winter fishermen build 30-50 new traps to replace those lost or damaged beyond repair, and it takes about three to five years to build up a set of 200 to 300 traps. Some men in their early twenties fish only lobster while living with their parents. This provides them with support while they increase their number

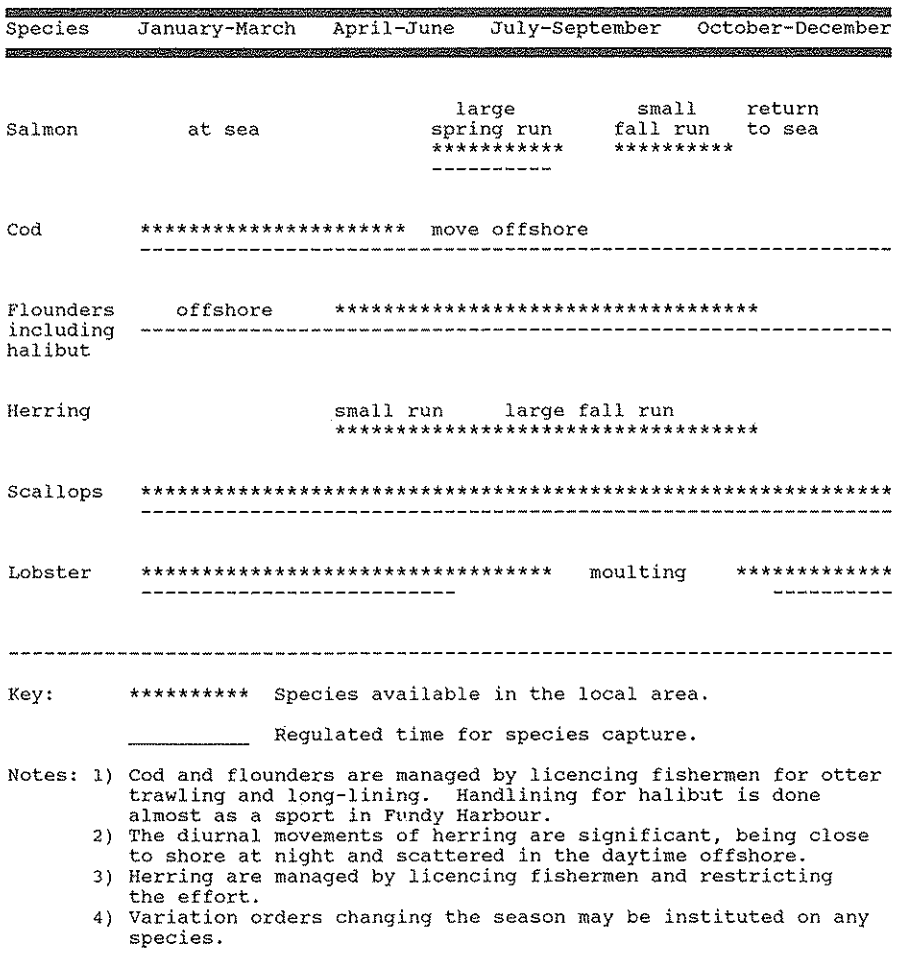


Figure 1. *Availability of Species and Regulated Seasons*

of traps to 200, the minimum for profitable lobstering. Since a truck is essential for moving traps as well as other gear, this too must be acquired and maintained. Thus, a fisherman needs about $25,000-30,000 to begin, assuming a used boat and truck can be obtained cheaply. Once the basic gear is acquired, other equipment such as a fathom meter, radar and radio is added, increasing the costs to $40,000 or more.[4]

Despite the dominance of lobstering, more than a single licence is necessary for financial independence. No fisherman in our study maintained a household with only a lobster licence (see Table 1). Thirteen also had herring licences. Herring fishing is frequently done by building a weir, a circular shaped wooden fence from 5 to 100 metres in diameter. A net is fixed around the fence posts when

the herring are running. Fewer fishermen use a shut-off seine net to block off a small cove at night after the herring have come inshore. Both require large amounts of capital and most weirs are jointly owned by three to ten men, although a few are owned individually. This fishery is viewed as something like a lottery and big catches of herring are talked about with great anticipation as fish landings increase in frequency and size of catch in late summer. Herring are significant not only for marketing but also as bait for lobstering and groundfishing. Groundfish, including cod, require less expensive gear: a longline of multi-baited hooks, floats, flags with radar reflectors, and tubs for storing the line can all be acquired for less than $5,000. Groundfish can be pursued at any pace, night or day, and the prospect of a large catch in a limited amount of time and with relatively inexpensive gear is attractive to young fishermen. Thirteen men in Chance Harbour and Dipper Harbour had groundfish licences. Scallop fishing is less significant as an income producer, because gear costs about $30,000 and licences are hard to obtain. Only six men held scallop licences. Some fishermen bought scallop licences primarily to keep an option in that fishery; they did fish when told that they had to rig up their boats or their "back-pocket" licences would be revoked. At present, lobstering is the staple, supplemented with cod and irregular but huge catches of herring. But before the ban, salmon was the fish everyone hoped would be caught in spectacular numbers; salmon traditionally was second to lobster as an income producer.

Limited Licensing in the Salmon Fishery

Before World War I, there were over 80 salmon fishermen in the Bay between Saint John and Point Lepreau. The war reduced this number, but there was also a turn to other occupations. From the 1920s until the ban on salmon fishing, there were about 40 fishermen, although the number varied with the size of the salmon runs. Older fishermen remember well when they had to pursue other fish or work on the land when salmon runs were low. This was "expected." By 1981 there were 27 driftnetters along the coast from Saint John to Point Lepreau (see Map), ten of which came from Chance Harbour and Dipper Harbour. During the ban several turned to full time jobs since they could not fish salmon, and some men died, in which case licences were inherited by their wives or children. However, until 1983 fishermen were prohibited from transferring their salmon licences to sons. For example, in 1981 an 80 year old salmon fisherman was forced to fish with his son to whom the licence could not be transferred. A year later when the older man no longer had the strength to go out on the boat, his only option was to sell his licence to the government. The son, an active full time fisherman was reduced to two licences for supporting his household. The father had wanted to give the licence to his son and pleaded his case with fisheries officials. He was not successful. A year later the restriction on licence transfers was rescinded due to pressure from fishermen. Children can now obtain their father's licence. This is still not an open market situation since the children are the only eligible buyers. Nevertheless, this was *one* occasion of successful lobbying by

fishermen for a change in bureaucratic regulation.

The question of transferability of licences, that is the open sale or passing from one person to another as opposed to inheriting licences, is problematical. It can be argued that the owner of a licence should be able to sell it for the best price he can receive and so his licence is part of his assets. But should the licence holders be able to profit from the sale of a privilege created and granted by the state? Levelton concluded that, in general, "free transfers of limited entry licences should not be permitted" (1981:54) but that controlled transfers, particularly to allow the continuation of an operation, could be tolerated. The implication in Levelton's analysis is, however, that it is company ships and factory licence holders who would need this exemption to continue their business not small owner-operated licencees. From the Chance Harbour example, it can be seen that the government initially prohibited transfers but, after hearing the users' arguments, modified the rules to include owner-operated boats.

Licence freezes have necessitated different responses among young men: some shared a father's licence and/or worked for other fishermen at various times. Several tried wage work but found it not to their liking and later entered the fishery with their savings. Some studied at technical schools and then took industrial jobs in the area and left the fishery. Without fishing, the communities would only be residental areas for workers. Dovetailing the switch from fishing to wage work among local men is a migration of workers from Saint John to Chance Harbour and Dipper Harbour, many of whom work at the nuclear plant at Point Lepreau. While relations are pleasant between older families and recent arrivals, some of the former sense a loss of community spirit based on shared experiences.

Salmon fishing is a key part of the communities' fishing identity. The summer salmon season was a significant social time in the villages, and informants cited several cohesive aspects of salmon fishing. When fishermen returned with their salmon nets tangled with seaweed, members of the community would be down at the wharf to help. There would be a great deal of excitement in the morning when the boats returned from a night drift – the fisherman with the largest catch was greatly admired for having the largest catch, for which the terms "high boat" or "high fisherman" are used. Such accolades would rotate among the fishermen as the season progressed, excitement increasing with daily increases in the catches. Praise for individuals was expressed in terms of their abilities in catching salmon. This acquired status was even partially extended to offspring. Informants might comment on a young man's good qualities, adding that "his father was a good salmon fisherman." While the latter comment appears as an afterthought, we believe it is a fundamental part of their community values. To say that salmon fishing is good cannot be denied; to add that one is a good salmon fisherman is not only the highest of praise, it confers a little of this status on everyone in the community. It would be very surprising if the son of a good salmon fisherman could not fish, as of course sometimes does happen. It is for this reason that government regulation of the salmon fishery is viewed with importance by all the residents even though only a minority still have salmon licences.

Salmon Fishing Prior to the Ban

Regulation of Atlantic salmon fishing is divided into federal and provincial areas of jurisdiction. Provincial governments control the angling waters with little federal intervention. The federal government controls commercial salmon fishing at river mouths, estuaries and bays. Despite attempts by both levels of government to increase the stocks, salmon have declined in all New Brunswick rivers since before 1850. At that time Perley attributed the decline to "the destruction of the fish on the spawning beds in the upper parts of the rivers" and in the settlements below where they were "speared, netted and poached in every mode that can de devised" (1852:76). As a result, the Government of New Brunswick established regulations preventing the complete blocking of a river but allowing angling on parts of rivers. To use a net was to poach, and while this was applied to river fishing a general bias against nets and commercial fishing may have resulted from the public outcry against such methods.

The Saint John River system has great salmon spawning potential and many fishermen harvest this resource. In 1981 there were 27 licensed salmon driftnetters in the Bay of Fundy. An additional 30, mainly part time, fishermen pursued salmon, shad and gaspereau at the mouth of the Saint John River. Still others set traps and nets farther up river. Native fishermen harvest salmon just below the Mactaquac Dam, and anglers cast their lines all along the river and its tributaries.

Throughout the past 100 years salmon has been one of the most valuable fisheries even though the season is short and the stocks have fluctuated. Fishermen told us of problems in the late 1920s when the salmon were scarce, having gone through one of two major downward periods in this century.[5] The price and demand for salmon was then higher, offsetting the low returns. Cyclical fluctuations are acknowledged by fishermen and biologists alike with some attributing the variation in salmon runs to the 11/22 year sunspot cycle or to tidal and related environmental changes (see Huntsman 1952; Belding 1984) rather than to excessive exploitation.

However, the 1950s saw a steadier decline in salmon catches than at any time in the previous fifty years (see Figure 2). Cycles were less noticeable, possibly a result of the highly variable pursuit by fishermen and unreported catches. This continual decline was likely due to the building of dams, chemical spraying of forests and agricultural land, and other environmental pollution (Ruggles and Watt 1975; Elson 1967, 1974; Dadswell et al. 1984:244).

Another major factor in the salmon decline was the discovery of their feeding grounds off West Greenland in the early 1960s. The first recorded catch was in 1960 by native Greenlanders using shoreline gillnets, reaching a peak of 1539 tonnes in 1964. European based boats, mainly of Danish origin, fished salmon on the high seas from 1965 to 1975, reaching a peak in 1971 of 1240 tonnes (May 1973:373). By the late 1960s it was clear that the resulting high sea drift net fishery was greatly reducing Canadian stocks (Paloheimo and Elson 1974), but it continued until 1975 (ICES 1979:43). Not only were salmon stocks hurt by Dan-

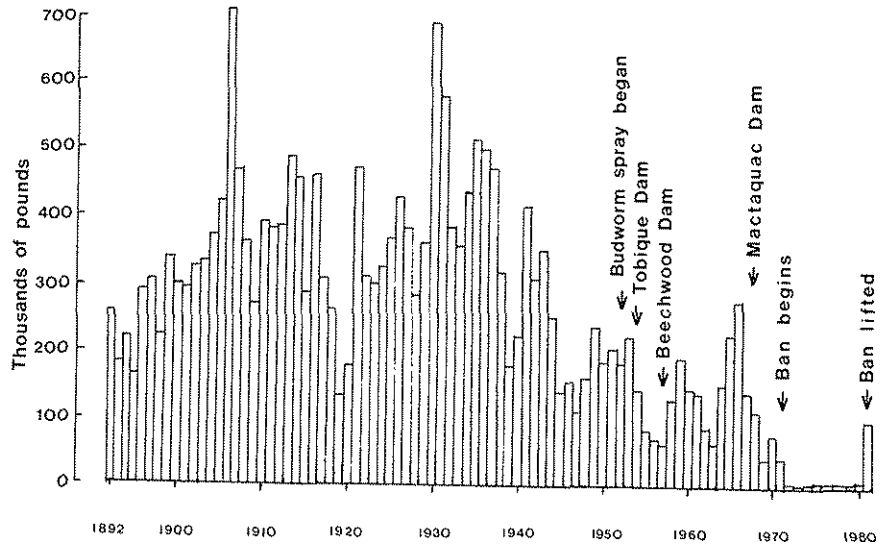


Figure 2. *Commercial Salmon Landings on the Saint John River, 1892-1980*

ish high sea fishing but also the runs were at the nadir of a natural cycle. Due to uncertainties in determining the origin of the fish caught in Greenland, it is impossible to determine the precise impact on fish originating in the Saint John river. Important for Saint John salmon was the Mactaquac Dam, built near Fredericton in a three year period beginning in January 1965. Commercial salmon fishermen partly attributed the scarcity of salmon to the building of this dam, where both an elevator system for transporting fish over the dam and a salmon hatchery were constructed. Despite these enhancement facilities hatchery production only reached desired levels by the mid-1970s (see Penny 1980). Although everyone was aware of cyclical variations, Jack Davis, Minister of Fisheries in 1972, argued that the Atlantic salmon was "an endangered species" (cited by McKernan 1973:13; see also the Minister's statement on federal policy, Davis 1973).

The Ultimate Quota Limitation: The Ban

In 1972 the federal government instituted a five year ban on commercial salmon fishing. After 1977 the ban was repeatedly extended for "one more year" until its partial lifting with small quotas in 1981. The ban was effective for all of New Brunswick except the Petitcodiac estuary, where drift netting was allowed. The fishery in southwestern Newfoundland was also closed because it was intercepting fish swimming towards the mainland. At the same time Quebec, which has control over its commercial fisheries, closed the Gaspe Bay salmon fishery (Meagher 1981:6).

Compensation was paid to the commercial fishermen by the federal government, the amount being "equal to the value of their highest reported annual catch during the period 1965 to 1967 or $2,000 whichever was greater" (Meagher 1981:6). A program to buy back salmon licences was also established.

Effects of the Ban

Bay of Fundy fishermen regard the salmon fishery as the one requiring the most skill and knowledge because of complex movements of tides, wind, and other boats which must all be considered each time the nets are cast. Continued careful observations of these conditions are essential. Experience accumulated over many years makes the difference between failure and an adequate catch. Salmon fishing is the preferred activity not only because it traditionally provides a large cash income but also because it offers a challenge and the possible reward of a high status in the community. It is almost an expression of the fisherman's identity in his community (see Taylor 1981). The nine year ban, therefore, deprived fishermen of a chance to test themselves and younger men were unable to learn the skills required for this difficult fishery. Fishermen experienced a great sense of frustration when they were prevented from fishing. These non-monetary losses may be intangible, but they are real nonetheless.

Monetary losses were substantial. Nets which had been left for nine years had to be replaced or repaired due to rot and damage by pests. Many fishermen had to tie cork and lead lines to new nets at a cost of more than $1,000 per hundred fathoms. (Nets normally are 500-600 fathoms long.) Secondly, compensation remained the same over nine years despite a tripling in the wholesale price of salmon and a doubling in the cost of living (Canada, Fisheries and Marine Service 1972:34, 36; *Bank of Canada Review* 1982:S132). Considerng inflation alone, salmon fishermen effectively lost thousands of dollars.

Another effect of the ban was the heightening of the fishermen's mistrust of governmental authorities, a feeling that originated in experiences prior to the ban. For example, in June 1971 the fishery was closed for a few weeks to collect a brood stock of 1,000 salmon for the Mactaquac hatchery. Fishermen accepted this closure as reasonable but were not informed when the 1,000 fish had been collected and so they did not return to fishing as soon as they might have. The result was that the commercial catches that year were less than half those of the previous year (see statistics in Harvesting 1978:72). Ten years after this incident, it was still being cited as an example of how untrustworthy the government could be.

The commercial fishermen were angered much more by the government's failure to contain anglers and other fishermen. It became clear throughout the ban that the fish that commercial fishermen were prohibited from netting were being hooked by greater numbers of anglers. The *greatest* pre-ban number of angling fishing licences was 16,806. By 1977 there was a 27.8% increase to 21,471 anglers (ibid.:15). *Reported* angling catches ranged from 1,000 to 2,500 large salmon during the ban or about one-third of the commercial catch just prior to the ban

(ibid.:72). Black marketing of poached salmon was also widespread and the stock increased more gradually than expected.

Exploitation of salmon stocks increased outside New Brunswick too. While not denying Newfoundland fishermen their rights to a livelihood, New Brunswick fishermen thought Newfoundland salmon fishing should have been restricted too. They were keenly aware that Newfoundlanders were allowed even more salmon. In fact, Newfoundland salmon gear *increased* from 14,501 nets in 1969 to a high 21,838 nets during the ban (ibid.:10). Newfoundland's catch increased from about 1,441 tonnes in 1969 to 2,044 tonnes in 1975 (ibid.:29).

The people of Chance Harbour and Dipper Harbour realize that many things affect the potential future salmon stock, particularly the natural cycles, effects of industry, and fishing in international waters. Still, they wonder why they should be the major contributors to stock recovery. It might legitimately be asked why should Fundy area fishermen suffer the ban when stock depletion was, in their view, somebody else's responsibility? While the commercial salmon ban may have had considerable public and moral appeal, its wisdom in the absence of control on *all* levels of the fishing effort was questionable. Because it was accurately perceived by New Brunswick commercial fishermen that the fish they were prevented from catching were being harvested elsewhere, much discontent about regulations and their enforcement was fermented.

Within the community compensation payments caused dissension. First, the ban conflicted with the community's sense of distributive justice and its work ethic. Non-salmon fishermen envied the salmon fishermen who were being paid without having to work. One man who had a ground fishing licence asked rhetorically, "How about a ban on cod fishing?" Second, the formal specifications of eligibility for compensation were questioned. An example was an older man who had fished salmon most of his life but happened not to be active in the two years previous to the ban. He considered himself a salmon fishermen, as did most members of the community but the government did not. In addition to the loss in income, this man lost prestige. Third, the application of a universal occupational criterion without consideration of broader economic circumstances was also a problem. Compensation was paid to part-time fishermen who held full-time non-fishing jobs. Examples of such cases in Lorneville and Saint John were cited by Chance and Dipper fishermen, who felt that payments to such part-timers were unjustified. Fourth, fishermen complained that there were inequalitites in the determination of the amounts paid. Because most had sold some salmon privately, their receipts did not represent all their catches and at least one commercial buyer had not issued receipts. At the time of these sales, no one foresaw that receipts would be necessary. Fifth, universality was lacking. Several fishermen complained that some were asked for all their receipts whereas others were not required to show any. Thus, some were undercompensated because they lacked receipts whereas others were overcompensated because their receipts had not been checked carefully. Problems concerning compensation were discussed openly on the wharf throughout the 1981 season, with allegations that officials had handed out payments for political reasons.

Limiting Effort by Reducing the Season

In 1981, commercial salmon fishermen sent representatives to the Zone Management Committee, which was supposed to allow fishermen to determine how to divide the available stock among commercial, sports and native fishermen. This committee was revealed as a sham when the Area Manager told the members that there would be a set limit to the number of salmon for each group. *He* would decide how many fish each user group would receive, regardless of their opinions. The Area Manager later announced the opening of the 1981 season with a threat: any abuses would result in the *commercial* fishery being closed. Since only the commercial fishermen were mentioned the implication was that they were the ones who would cause trouble. When the season was closed after one week, the fisheries liaison officer, an employee of the Area Manager's office, was not forewarned. Like most of the fishermen, he learned of the closure from radio and television news programs. No fisherman was officially informed of the reason for the closure but the Area Manager announced over the radio that the fishermen were catching too many big salmon (CBC 9:00 a.m. news June 16, 1981). In addition, the fishermen were not told whether the season would reopen.

In the short 1981 season each fisherman caught all his allotted 79 salmon. They caught very few of their quota of 107 grilse because they were not informed early enough about the grilse regulations in order to purchase smaller mesh nets (for a fuller discussion of the 1981 season see Pool 1982). Despite being allowed to catch salmon for the first time in nine years, they had heightened feelings of distrust for fisheries personnel and their regulations. The manner in which seasonal limitations were announced increased their alienation from the bureaucray. Zone Management Committee meetings did not alleviate the situation; rather they focussed the fishermen's feelings of powerlessness.

Responses to Regulation

Since 1981 commercial fishermen have felt that they have less control over their lives. They feel bombarded with regulations and possible closure of one or another of their fisheries and under these conditions, dissatisfaction has increased. Middle aged men said that if it came to a choice between breaking the law or not having enough food on the table, they would fish in violation of the regulations. Ordinarily, Chance and Dipper fishermen believe that breaking the law is wrong and they conform to fundamentalist Christian standards of hard work and abstinence from alcohol. The myth that fishermen are heavy drinkers who break regulations regularly by catching and marketing fish illegally has no substance here. This was evidenced in their attitudes to taking undersized lobsters. In the 1970s they regulated themselves by mutual agreement: nobody would take small lobsters even for home consumption, and this self-management scheme has been over 90 percent successful.[6]

Thus older men's statements condoning illegal activities reflect radically

different values, and they hear even more extreme views from the younger fishermen. Some, frustrated by their inability to get licences, claimed that they were prepared to fish with a gun, which, although said in the heat of discussion, cannot be discounted. Other young men thought that a union might benefit them. Unionization is quite contrary to their stated ideal of self-sufficient independence. These expressions of changing values within the community have been clearly precipitated by an authoritarian bureaucracy.

Fishermen of all ages see government regulations as an oppression which increasingly undermines their abilities to make a living. The fishermen's response to government licensing of each fishery or gear type has been to acquire as many licences as possible in order to maintain their accustomed flexibility. As Anthony Davis noted (1984:145), this defeats the purpose of licensing and as we found, actually increases fishing because there is the possibility that unused licences will be rescinded. The fishermen feel cheated of their historic rights to fish all species and object to being controlled by government bureacrats who sit in their offices and rarely see the rigors of the fishermen's daily work. They fear that a physical confrontation will occur and they are concerned about government training of Fisheries Officers in the use of firearms. Such feelings must be understood in the context of mistrust of fisheries managers, who have a much different, almost alien, view of the situation. As Leyton (1978) has shown, bureaucratic world views are likely to conflict with grounded realities, i.e., the culturally rooted understandings of the people. Failure to take these realities into account results in discontent, possibly leading to violence.

Because fishermen are engaged in more than one type of fishing, the regulations for one fishery affect other fish stocks. In response to the loss of salmon fishing, the number of men lobstering in the spring season has increased by one third. In addition, these fishermen have more traps, pull them more frequently and increasingly exploit the offshore stocks in response to intensified effort inshore. Given the poor understanding of lobster reproduction and migration (see Scarratt 1979), the biological impact of the shift from salmon fishing to increased lobstering cannot be assessed acurately. However, the government officials have become concerned about lobster populations in the Fundy area. In the early 1980s, a lobster "coordinator" was appointed in an effort to convince fishermen to increase minimum legal size and thus the reproductive potential of the stock. The logic of this proposal is questioned by commercial fishermen because of biological unknowns and, of course, the fishermen would lose income, at least temporarily, if the minimum size was increased. The opposition to the government in this instance is of particular interest because when the fishermen decided themselves to throw back small lobsters, that was done. Their reaction appears to be part of a mounting negative response to anything the government suggests. If government pursues such regulations there will likely be more tension in the lobster fishery.

Although government regulations have been a divisive force with disruptive consequences, they have also spawned unifying associations within the fishing communities. At the time of the ban, most commercial salmon fishermen became members of the Saint John Commercial Fishermen's Association, which focussed on the salmon fishery. This association was very active in representing the Saint John harbour fishermen, many of whom worked part-time at a variety of jobs in the city. Because these fishermen had different interests from those of the Chance and Dipper fishermen, the latter aligned themselves with the other Bay of Fundy fishermen in 1984 to form the Fundy North Fishermen's Association. The focus of this group was the lobster fishery and in it the salmon fishermen were a small minority. Therefore, in 1985, the Fundy Salmon Driftnetter's Association was formed with 22 members, i.e., all but the two Fundy salmon fishermen who were near retirement.

Despite having only a few hundred dollars for expenses this association successfully lobbied for the fishermen. In 1984 salmon fishermen were not allowed to fish the reduced salmon stocks, but they were compensated. In 1985 when fishing was again closed and compensation offered, the government required fishermen to sign a compensation agreement which implied that the $4,000 they were to receive was a first instalment on an eventual buy back of their licences. The fishermen were confused by this document, feeling that their choices were to accept the concept of a buy back, which they did not want, to forego the $4,000, or to fish illegally. They could not get clarification from the federal government despite repeated attempts to contact the Minister of Fisheries by telephone and letters. After obtaining counsel, the Fundy Salmon Driftnetter's Association decided to seek a temporary injunction. This was the first time commercial fishermen in the Chance and Dipper Harbour communities sought legal assistance to change regulations collectively. The federal government responded only after notice of the injunction was filed and a settlement was reached two days before the injunction was to be heard in court. The clause stipulating that fishermen were giving up their traditional fishing rights was deleted and unconditional compensation was given. At the time the fishermen did not rejoice in their victory. Instead they thought that the bureaucracy would simply try a different approach. Because the government has great legal and financial resources, they still feared for the future of the commercial fishery. The formation of these associations and their continuing viability are evidence of changes in the fishermen's attitudes to their work and their relationship to the larger society. It is a new work environment, created directly by government regulations.

The power of the salmon anglers is another concern. Many commercial fishermen think that the government wants to preserve the salmon for the anglers, who have powerful allies in the provincial government. For example, J. W. "Bud" Bird, Minister of Natural Resources in the Provincial Government from 1978 to 1982, was an ardent angler who often opposed the commercial fishery and later became director of an angler's group, the Atlantic Salmon Federation (the Fredericton *Daily Gleaner*, 7 April 1982; 4 August 1983; the Saint John *Telegraph-Journal*, 2 November 1983).

The provincial government has been steadfastly in favour of angling interests. Before the ban a provincial government study estimated angling to be worth $10 million, whereas the commercial fishery was worth only half a million (New

Brunswick Department of Natural Resources 1971:47). The International Atlantic Salmon Foundation (IASF) and the Atlantic Salmon Federation have also supported studies suggesting the value of angling in New Brunswick to be over $70 million (Tuoni 1980:25). Many commercial fishermen doubt the accuracy of this estimate, and indeed a figure of $2 million is more realistic since Tuomi's estimates include direct government revenue from licensing and leasing riparian rights and even property value of riparian rights. Obviously, the value of the sports fishery is of great importance to the Government of New Brunswick, not the least of which is the direct revenue. But it could be argued that the value of commercial salmon fishing, if it included the values of all associated fisheries (as well as taxes, personal property, and equipment), is very valuable to New Brunswick's economy.[7] Notably, the decision to allow angling to continue was regarded even by some federal government biologists as "political," in other words it had little to do with the economics of salmon harvesting or biological realities. Other biologists support angling because they believe that it is easier to control. Also, in recent years the federal government has led the way in replacing commercial catches of wild salmon with aquaculture promotion (see for the aquaculture policy Canada, Department of Fisheries and Oceans 1986:10). In support of aquaculture more than a quarter of 1983's government hatchery smolts were sold to fish farms rather than released to return as wild salmon (ICES 1984:6).

Another powerful organization, the IASF was funded extensively by anglers. The IASF has spent a considerable amount in research and publicity on conservation measures, advising governments on the "damage" done to salmon by commercial fishermen and it continues to put pressure on governments to ban commercial fishing to "save the Atlantic salmon." They were successful. Another buy back program was implemented in 1986. However, most Fundy region fishermen rejected the government's offer, unlike their counterparts in the northeastern part of the province who were more likely to give up their rights.[8] Previous, partially successful, collective action may have encouraged greater levels of both resistance and cooperation among the Fundy fishermen.

Chance and Dipper fishermen feel daunted facing bureaucrats who are supported by wealthy sports lobbyists and who can devote all their working hours to formulating regulations against commercial fishermen, who have to go fishing as much as possible to make a living. Increasingly, they spend their evenings and weekends discussing how they should respond to a new regulation proposed or imposed on one or more of the principal fisheries.

Discussion

It is clear that the 1972-80 ban on commercial fishing was not effective in increasing the salmon population and that regulation of the salmon fishery has had significant economic and social effects on the human communities. These are primarily: 1) reduced income, 2) a decline in the status conferred on salmon fishermen, 3) loss of the driftnetting skills, 4) destruction of the community's

identity as a salmon fishing culture, and 5) changes in community values and associations. Nearly all Chance and Dipper fishermen now believe government is working against them. Socially this is very significant because they view themselves as hard working and willing producers who love their way of life, who pay taxes and seldom collect welfare, who are therefore, contributors to the economy, harvesting several renewable resources for public consumption.

The conflict may be analyzed at several levels. It appears that the economic value argument holds weight for many people. Angling provides greater revenue than commercial fishing and individual consumers suffer no direct loss as long as salmon is available for sale either as angled grilse or farmed fish. Anglers can continue to enjoy their sport if they leave the large salmon to spawn.[9] But at another level we are seeing two world views; elected representatives and their bureaucrats explain the same phenomenon as the primary producers, i.e., the fishermen, with different cause and effect chains. The foundations of their experiences are totally different as are their objectives. The bureaucrats are there *to protect the fish* and so they devise rational management plans completely outside the community context of commercial fishing. Fishermen, if they are taken into consideration at all, are seen as impediments, just like any other hazard in the way of biological reproduction. This neatly dovetails with the economic value arguments – an economically expendable, numerically small group can be eliminated with few political repercussions. On the other hand, commercial fishing has, under the *Canadian Charter of Rights and Freedoms*, a right to exist.[10] Furthermore, since at least in the Bay of Fundy region these producers are economically successful, there is a practical reason for society to support their continuance.

Ideally, limited access should improve the standard of living for fishermen and even provide rent for the state (Levelton 1981:42-43). In practice, the claim that "it allows for increased incomes to labour and capital involved" (ibid.) was not supported. We cannot accept the assumption that there are too many participants in the Bay of Fundy. Limited licensing for this user group is not a solution to the declining fish stock. Their number has been declining since the first world war, in direct relation to the resource. In theory, limited entry "can allow for a more even distribution of benefits or access to the resource between individuals, areas or provinces" (ibid.:43) but in fact, the salmon resource was distributed unevenly. Limitations did not lead to more rational fishing practices and the stocks did not recover as expected. At least in part this was because the state acted on behalf of other users. It is not a case of a "tragedy of the commons" but a "tragedy of incursion" (McCay and Acheson 1987:29).

In their effort to preserve the salmon stock the government has become its sole manager. Cynically, it can be noted that the change to a government controlled fishery has spawned a large bureaucracy. As manager, the bureaucracy devised policies based largely on biological research. In doing so the government has impinged on the territorial use rights of New Brunswick fishermen by allowing salmon to be intercepted elsewhere. TURFs which existed were allowed to increase and new TURFs were established which are now difficult to ignore. By

not allowing Chance and Dipper fishermen to maintain, by practice, their own TURF, a weakening of that TURF might be expected to take place. However, government regulation and mis-management has strengthened the resolve of salmon fishermen.

In general, an easing of regulation could actually reduce effort insofar as the local TURF would be recognized and subject to control, if the community had a meaningful role. From our experience we have no doubt that inshore fishermen wish to continue harvesting the resource which is accessible locally and that they would do so in a measured way. Many fishermen told us that their main reason for preserving the stocks was for their children. If there is a future in the fishery for their families as well as for themselves, fishermen are more likely to protect the fish on which their way of life depends. However, from the perspective of the present fishermen, if licences are not available to their sons or if government regulates commercial salmon fishing so that it is no longer profitable or the timing and the length of the season are too uncertain, then the stocks might as well be fished out now. The government has now, however, become the controller of the supply, thus radically altering the traditional supply and effort dichotomy of inshore fishing.

In this paper our object was to demonstrate that while enhancement of the salmon stock is necessary, current regulation and the manner in which it has been implemented is changing fishing communities and fishermen's attitudes. Government ignorance and occasional contempt for the suggestions and recommendations of fishermen has led to confrontation rather than cooperation. The fishermen have suffered from inadequate and erroneous intervention by the state and they have seen state-supported incursions on the resource they harvested for generations. These incursions are from Newfoundlanders and native fishermen, over which government has legal jurisdiction if not control, as well as from Greenland and Danish fishermen, who are subject only to moral suasion. Chance and Dipper fishermen feel they were overlooked. We feel that the government also ignored the social and economic context of commercial salmon fishing. As Anderson has argued (1982), these are crucial elements in management. Since the previous methods imposed by the government have not been successful, perhaps co-management should be tried using the associations already established. The anglers, the Indians, the Danish high sea companies and the inshore fishermen all want to continue fishing salmon. All need a healthy stock. These common factors could be the unifying ones for a co-management system. However, for any co-management system to function well, the government would have to relinquish its role as sole owner/manager and either accept a role as a partner, which they have done briefly before (Kearney 1984), or as a referee. Self-management of the fisheries has also been suggested (Rothschild 1983) but it might require more time and finances than the Bay of Fundy fishermen can afford.

The present relationship of the fishermen to the government is similar to that of workers to employers, at least in terms of power. They have become, as Sacouman (1980:241) put it, semi-proletarianized in a political sense in their class like

relations. However, they cannot strike for better wages unless they make some collective agreement with fish buyers, which is now possible under New Brunswick law (see New Brunswick 1987). Their actual class like relationship is with the *state* in seeking access to resources, not just better income, and also a change in their working conditions. Fishermen have a common identity despite their individualistic pursuits, based in community and in the salmon harvest. Increasing class consciousness is masked somewhat by their goal orientation and by the multiplicity of fish they now pursue, resulting in a diffusion of interest. In view of this diversity and their ethic of independence it is surprising that some of them have taken protective action, and it is likely that the next generation will be better equipped to face the onmipresence of the state.

For Chance and Dipper fishermen a deeply entrenched independence of spirit, based in the work of fishing and the constant pursuit of the big catch, keeps fishermen – literally – alive. However, without a change in government methods of planning and implementing fisheries policy, a way of life now enjoyed by many Maritimers may be lost. Already it has been altered significantly by existing regulations, making a return to community-based, resource management very difficult.

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Notes

1. Unfortunately for our purposes, Levelton did not include salmon in his discussions of the particular species (1981:8-15) and the Bay of Fundy was not considered separately from the entire Scotian shelf region.

2. There is still extensive coverage from anglers and commercial fishermen. For coverage at the time of the ban see for example, the Saint John *Telegraph-Journal*, 22 March 1972; 25 April 1972; 26 April 1972; 28 April 1972; for more recent articles showing the different points of view see the Fredericton *Daily Gleaner*, 18 August 1983; 19 August 1983; 13 February 1987.

3. No household survey was taken of this community for this reason.

4. These estimates are based on cost figures from the early 1980s.

5. In the 1920s and 1930s commercial catches in Atlantic Canada varied between 2,000 and 5,000 tonnes but averaged 4,000 tonnes. During the 1950s and 1960s severe declines were experienced, with catches varying from a low of 1,200 in 1955 to nearly 3,000 tonnes in 1967 (Harvesting 1978:28).

6. Of the 27 fishermen in our study only two were said to keep undersized lobsters, which was considered improper as well as illegal.

7. Beverly Cook and Richard McGaw (n.d.) of the Department of Economics, University of New Brunswick completed a study showing a net profit of $46,000 on $1.2 million worth of commercial sales in 1983. The recreational fishery had a net value of $3.5 million.

8. Of the 75 remaining fishermen in the Fundy district, two-thirds sold back their licences compared to 85% in the Miramichi and Restigauche districts of New Brunswick (data provided by the Department of Fisheries and Oceans). Of the 27 driftnetters in the Bay of Fundy, about 15 retained their licences, according to information from local fishermen.

9. For the first time in 1983 anglers had to release any large salmon, but grilse, much less satisfying to angle but acceptable as food, could be kept, subject to a bag limit. Nevertheless, the "thrill of the big salmon" propels anglers to try their luck and skill. Most anglers still would like commercial fishing to stop and so provide more large salmon in the rivers.

10. See Canada (1982). Under Section 6(2) "Every citizen of Canada and every person who has the status of a permanent resident of Canada has the right . . . (b) to pursue the gaining of a livelihood in any province." It was under this provision that the 1985 injunction was going to be argued in court.

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