

COMMUNITY MANAGEMENT IN GROUND FISH: A NEW APPROACH TO PROPERTY RIGHTS

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1. INTRODUCTION

Canada's demersal fisheries were based on the cod fisheries of the Atlantic coast, supplemented by haddock, pollock, flatfish, cusk and hake for the Scotia-Fundy sector (the waters off the coast of Nova Scotia). The Atlantic cod collapse had a major impact on all Atlantic Canada and most cod resources remain severely depressed to this day. Up until 1976 these resources were managed by the International Commission for Northwest Atlantic Fisheries (ICNAF). Domestic management of groundfish fisheries on Canada's Atlantic coast began in 1976, with the extension of jurisdiction to 200nm. This newly formed economic zone was to herald bounties from the sea through the replacement of foreign fishing with Canadian effort using management planning to define and direct fishing operations for the betterment of the Canadian public. This approach was expressed in the 1976 Policy for Canada's Commercial Fishery (Canada 1976) which stated the need to move to an economically viable fishery. In the case of groundfish, management planning outlined several objectives designed to accomplish this economic viability policy principle.

The groundfish fishery in Atlantic Canada is arguably the most complex of any fishery in Canada. Groundfish is the generalized term for a series of species of fish, mostly gadoid, which are harvested separately or collectively by many fleets involving thousands of fishermen. In the Scotia-Fundy Region, the community-based approach discussed in this paper depends on nine separate fleets, based on a combination of different gear usage (mobile and fixed-gear) and vessel sizes (vessels range from the very small under-10m to large wetfish trawlers over-30m in length). These fleets harvest eleven groundfish species ranging from cod to redfish in five NAFO divisions (Figure 1). This diversity of the fleets made attainment of the 1976 policy goals exceedingly difficult. The policy approach was to first develop management plans for the large, far ranging offshore-vessel fleet. Management initiatives were gradually introduced to other fleet sectors over the subsequent several years. For the inshore fixed-gear fleets, which use vessels under-19.8m in length and utilize handline (manual and automated), longline and gillnet gear, full management applications, including quotas, were not in place until the 1982 fishing season.

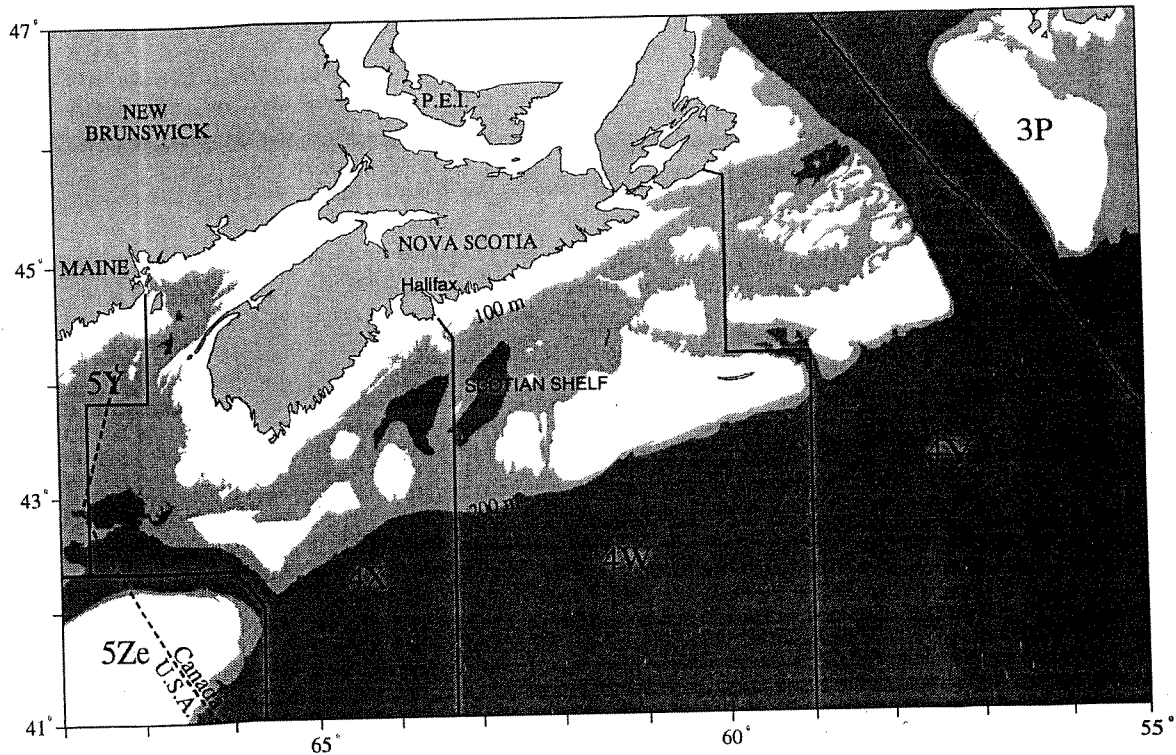
The goal of economic viability has led to a series of crises during the 25 years since 1976, largely owing to a number of factors working at cross purposes within the planning process. While the principle of economic viability remained paramount within the 1976 Policy, the lack of clear definition of what this actually was gave rise to

individual interpretations and manifestations. It became clear that management approaches did not meet the policy objectives, and the planned benefits to fishermen and the public of Canada, were thus not forthcoming. This led to a series of studies to define new directions for fleets as crises within these arose. For instance, in 1982, the Kirby Task-Force released a plan to bring stability and viability to the offshore groundfish fleets through the use of Enterprise Allocation programmes. This report again talked about developing plans to allow for economic viability. However, the focus only related to the offshore fleets (vessels over 30m).

The second crisis in the mobile-gear sectors within the Scotia-Fundy region came in 1989. The Scotia-Fundy Groundfish Task-Force (Hache 1989) focused recommendations on capacity/resource imbalances and mechanisms needed to bring stability and economic viability to the inshore components of the groundfish industry. The concept of maintaining an inshore fixed-gear sector outside of the offshore management plan, or through the use of allowances after 1982, permeated thinking of the day. It was generally accepted that inshore, fixed-gear operations, although numerous (3300 vessels), would apply relatively little effort on the large and seemingly fully-resilient groundfish stocks. Management of the larger inshore mobile and fixed-gear and offshore vessels (500 vessels) became the priority. Thus, by 1986 vessels over 19.8m were on company-based enterprise allocation programmes while the mobile gear sector under-19.8m and the fixed-gear sector 13.8-19.8m opted for ITQ based programmes, beginning in 1991. The vessels under-13.8m working fixed-gear (3300 strong) operated under an overall quota that was harvested on a competitive basis. This sector was permitted to continue fishing on a 1500kg/trip limit once the annual fleet quota had been reached.

Following the demise of cod resources in most parts of the Atlantic in 1992-93, widespread closures were implemented in the 1990s. On the Scotian Shelf, groundfish stocks in NAFO divisions 4Vn and 4VsW were closed in August 1993 and remain closed. Cod in NAFO divisions 4X and 5Z continue to be depressed as do haddock, pollock, cusk and hake resources. Many Scotian Shelf stocks have population biomasses at record low levels and it is only because fishers harvest a wide variety of groundfish in the NAFO divisions 4X and 5Z (Southwest Nova Scotia/Georges Bank) that fisheries are allowed to continue. The latest scientific advice suggests that groundfish resources continue to be depressed in Atlantic Canada, the USA and in International waters. At present, fishers are using harvest targets approximately 30% of those in 1990. The devastation of the groundfish resources has

Figure 1
Locations of NAFO Divisions in the Scotia-Fundy Region (5Y, 5Ze, 4X, 4W, 4V) of Atlantic Canada.
NAFO Division 3P is in Newfoundland Region



emphasized the need for management mechanisms that would allow fleets to better balance their capacity with the size of resource, for the continued viability of both. By 1995, all fleets (except the fixed-gear, under 19.8m fleet) had developed mechanisms to allow catch adjustments as the resource biomass changed size. There were two prominent events that called for management of the fixed-gear inshore fleet. The first was the dramatic reduction in the resource and the impact that the large active and inactive fixed-gear licences might have on it. The second was the increase in fixed-gear licences as a result of imposing ITQs on the mobile-gear sector.

Attempts began in the mid 1990s to bring management applications to the entire inshore fixed-gear sector. The 1500kg/trip limit provision for the under-13.8m vessels was eliminated in 1994 as one means of bringing the fishery in line with the resource. However, the development of management approaches within this diverse sector proved long and circuitous before the current community-based concept was developed. During the process, many associations representing inshore fixed-gear segments arose, resulting in intense competition within the advisory committees for allocation advantage, and often culminating with demands for the Minister of Fisheries and Oceans to intercede to change sharing arrangements. The priority to ensure continued viability of the inshore fleet resulted in destructive management decisions and resulted in overfishing of the dwindling resources.

Given the many problems with the management of the inshore fixed-gear fleet, a new approach was intro-

duced in 1995 on a trial basis in one area - Halifax West, Sambro, Nova Scotia, and was followed by a three-year test application on a regional basis beginning in 1997. This approach recognized differences within the sector by redefining fleets using either geography or "like-minded" views to better define fleet structures in order to accommodate the demands of the particular fleet-group in question. The term "like-minded" simply refers to the recognition of groups of fishers who have common management objectives. This trial in 1995 became the community-based management approach of today. As will be described below; it received wide acceptance. Industry management boards currently have almost complete control within this process and have moved the management concept well beyond that envisioned in 1995. The community approach may have application to other parts of the world or within other emerging issues such as aboriginal rights. This paper describes the development of community-based management, along with challenges, pitfalls, lessons learned and opportunities for the future.

2. HISTORICAL BACKGROUND AND THE NEED FOR CHANGE IN THE FIXED-GEAR FISHERY

The demise of the ground fish resources underlined the need for a rationalization of fleet fishing-capacity. The fixed-gear 13.8m fleet was the most numerous and although many vessels were marginal in activity, more than 2000 vessels were attempting to make a significant portion of their income from the Scotia Fundy groundfish resources. At the same time groundfish resources were mostly in decline and were being shared by other fleets

that had already addressed the problems of viability and over-capacity. However, the size and diversity of the under-13.8m fleet presented unique challenges that prevented a similar management approach to the over-13.8m fleet. Management activities in the over-13.8m fleets had at least started to address the fishing-capacity – resource balance by the mid-1990s. For the under-13.8m fleet in particular, the size of the fleet and the number of landing sites made enforcement very difficult if not impossible, and the large number of participants made it a political issue. Further, the large number of inactive licences raised the issue of the right versus the privilege to fish. There was also the belief that this gear does not harm the resource, *i.e.*, no level of capacity was harmful. This belief was re-enforced by non-government organizations (NGOs) that were supporting an anti-ITQ movement. Further, the bulk of the coastal community infrastructure was invested in this small-boat fixed-gear fleet (Table 1). The large number of landing ports, processing plants and the easy opportunity of direct marketing in the USA also supported the demand to find viable solutions to this problem as they could not be supported by the level of the resource, which was now at 30% of 1980's levels. This section below describes some of the management attempts on this fleet, providing context to the community-based management approach.

Table 1
Characteristics of the Scotia-Fundy groundfish fleets

<i>Mobile-gear fleet (trawl)</i>
Size 12m to 40m
500 vessels (1980)
135 vessels (1995)
2/3 all quotas
ITQ Management (1982-1990)
<i>Fixed-gear fleet (longline, gillnet, handline)</i>
Size less than 12m
330 vessels (1980)
3300 vessels (1995)
1/3 all quotas
Competitive Management
<i>Other</i>
500 landing ports; 300 plants; direct sales to USA fresh market

The under-13.8m fleet was assigned separate fleet-quotas in the 1987 Atlantic Groundfish Management plan for portions of the Scotia-Fundy sector. However, separate fleet-quotas had not been assigned to all groups until 1997. Table 1 provides a summary of the status of the various groundfish fleets operating within the Scotia Fundy sector. While the under-13.8m fixed-gear fleet was not formally defined in all areas until 1997 (it began in 1987 in some areas) the use of limited-entry licensing began in 1976. Therefore, the ability to compare the fixed-gear and mobile-gear fleets through time has been a fairly easy task. However, there is a degree of estimation in these figures as formal handline licensing for non-automated handlines did not occur until 1991. Prior to this, handline activity was either part of any longline operation or as a separate operation designated under

regulations. Criteria for this latter form of handline fishing required a fulltime, registered fisher using a vessel licensed under the government system. Therefore one can only assume that the number of participants has not changed over time.

The first major attempt at restructuring the small fixed-gear fleet occurred through the split in quota. This was first attempted in fisheries east of Halifax in the 1980s, and later and more successfully as a trial in 1995 using the community-management approach. From the trial in Halifax West/Sambro(HW/S), Nova Scotia, the development of a complete management approach based on community-allocations for vessels under-13.8m allowed the separate development of these fleets (under-13.8m) from the larger fixed fleet (13.8-19.8m).

At the same time that the HW/S began its community-management project, the remainder of the fixed-gear sector in the under-13.8m group established an allocation system based on the three gear-types of handline, longline and gillnet. In this approach, each licence-holder was required to choose between using one of three possible gear-types. Quotas were assigned based on the participation with these three broad gear categories. However, this approach proved to be unsuccessful with quota depletion occurring rapidly. Within these sectors, there did not develop any system of self-government and consequently the race-for-fish continued, as has been the experience with other competitive fisheries (Hardin 1968).

In contrast, the mobile-gear fleets through the use of quasi property-right programmes of EA's and ITQ's successfully addressed the imbalance between fleet numbers and available resource. The numbers of mobile-gear vessels active today is a reflection of this fleet's ability to adjust to economic and supply situations and ensure their viability operations. The inability of the fixed-gear fleet under-13.8m to address over-capacity within its quota share led to severe problems among all fleets as this sector utilized political pressure to change historical sharing arrangements (*i.e.* transfer quota to this sector at the expense of the others). However, rather than making these changes, DFO continually pressed for solutions to be found within the fleet sectors, a practice that in hindsight was ultimately responsible for the development of the community-management approach.

Environmental groups also became prominent in the debate. Along with the continuing support for coastal communities as a "proper way of life", new dialogue on environmentally-friendly harvest methods and ecosystem management became popular. They believed that the fixed-gear applications of gillnet, handline and longline were "more" ecologically friendly and moved the process towards more long-term, sustainable harvest applications and generally enhanced rather than degraded the resource overall. These arguments tended to be used within the sector as justification for the *status quo* as well as justification for the transfer of quota from mobile-gear to this fleet sector. Thus by the mid-1990's rationalization of most groundfish fleets had occurred except for the continuing over-capacity of the under-13.8m fixed-gear sector.

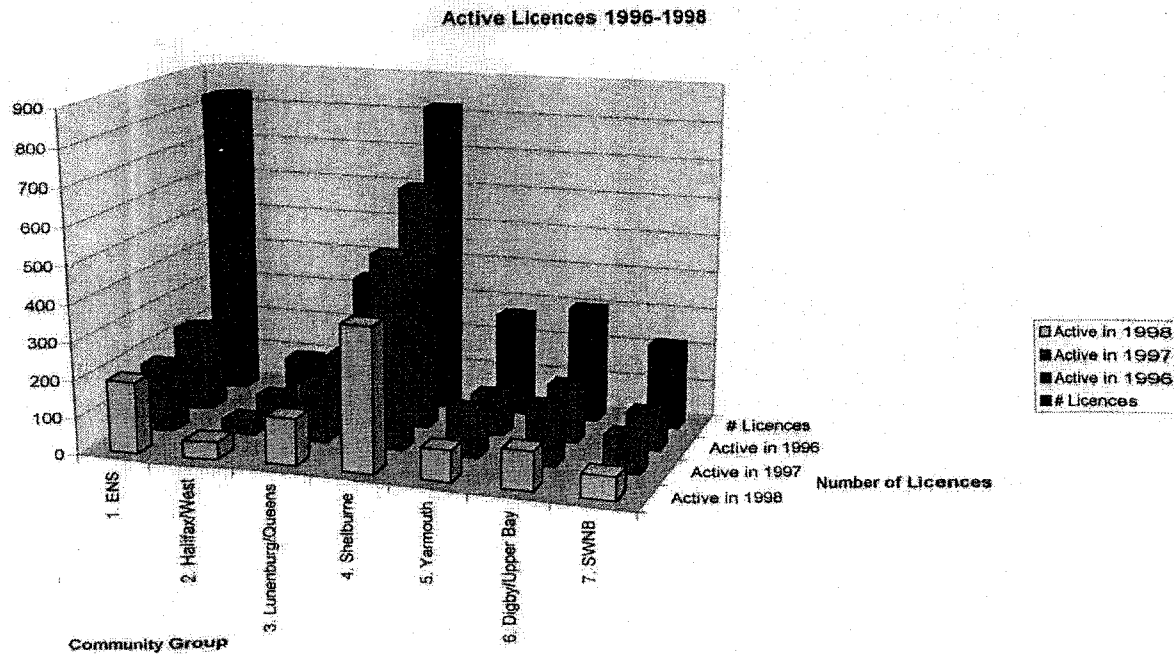
3. THE COMMUNITY BOARD SYSTEM

In 1995, the Halifax West group of fishers was the first to try a new approach – one based on area or community rather than boat size. Approximately 50 active vessels out of a total fleet of almost 100 vessels (Figure 2) requested to be permitted to manage an allocation of

vessels in the 13.8-19.8m category to create a separate group which would allow an independent management application to occur. This group was therefore separate and developed an independent harvest plan. For the remaining fleet under-13.8m, the following measures were implemented:

Figure 2

The number of active and total number of groundfish licences by community group from 1996 to 1998



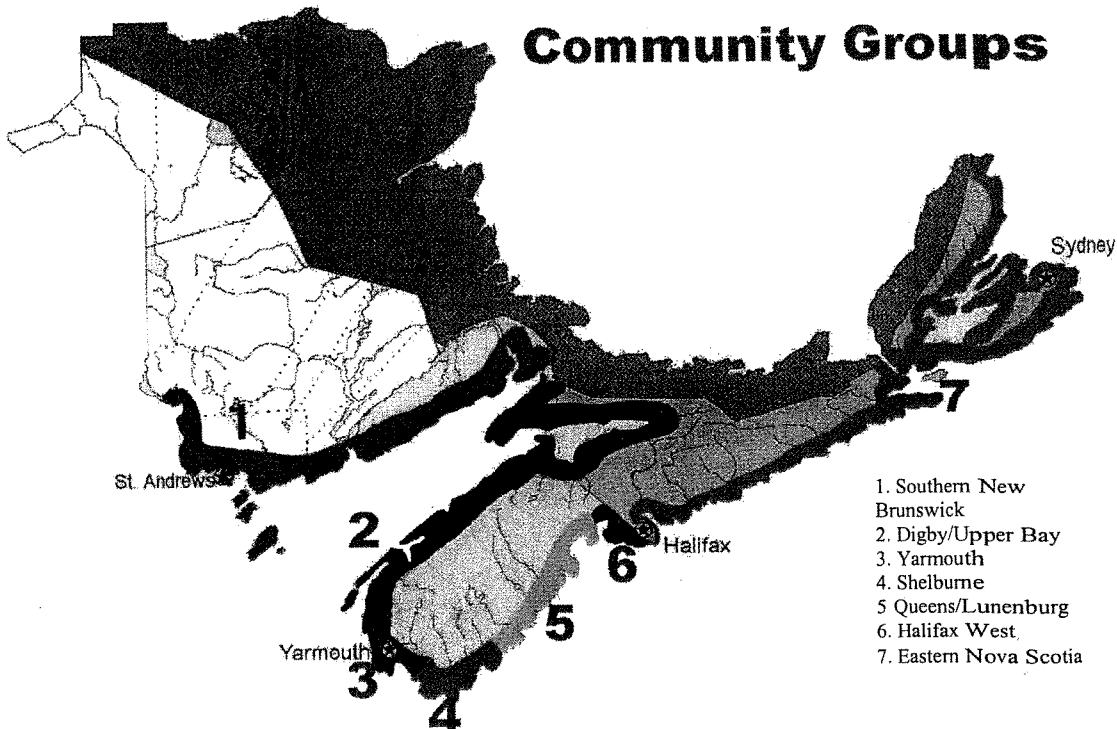
groundfish based on historic shares of the available resource. DFO assigned this group a quota of fish approximately equal to the historic share, applied as a percentage to the annual total quota. This group was given permission to manage this allocation as a “separate fleet” fully independent of the remainder of the fixed-gear fleet. DFO contributed to this exercise by encouraging dialogue on communities of interest for allocation purposes and, for the Halifax West experiment, providing separate allocations, monitoring and undertaking opening and closing season.

This initiative proved interesting to the rest of the fixed-gear fleet (all vessels under-19.8m), which was struggling with the day-to-day problems of an over-capitalized fishery. Through an industry-sponsored workshop and many industry/government meetings, the fixed-gear community decided to establish a programme of community management for the entire fixed-gear under-19.8m sector. As a beginning, vessels in the 13.8-19.8m category were to be excluded. This was done to allow the relatively small number of licence-holders operating

- i. A series of seven communities were established based solely on geography (Figure 3). The concept of “like-minded individuals” supported by DFO was rejected in favour of a geography definition as a means of avoiding the concept “corporate concentration/ITQ management” within the inshore, fixed-gear groups. However, the Shelburne community, because of the great differences between highline vessels and smaller inshore operators both in performance and philosophy, subsequently required partitioning into two separate management groups. This necessity provides one of the examples of why the geography decision was, in reflection, somewhat inferior to the like-minded approach.
- ii. All fishers were assigned to a community-based on the area of registry of the licence-holder as of 31 December 1996. To ensure choice, an opting-out provision was available which was relatively unattractive but which ensured that a choice would be made by each fisher.

Figure 3

Location of the seven community groups in Nova Scotia and New Brunswick. Each community group has a separate community management board



- iii. Establishment of Community Management Boards (CMBs), comprised of elected representatives which in most cases are fishers. These are private boards, designed to provide input into in-season management and to develop, implement, control and monitor the activities of the community fleet. Management boards also provide representatives to the public advisory process, including input into the long-term planning process for the gear sector. Terms of reference for the public fixed-gear under-13.8m fleet advisory process stipulate three representatives from each management board. At their inception, the CMBs were thought of as the social/economic driver for the particular community sector and were responsible for all activities associated with these functions, including the development and implementation of co-management approaches. Each CMB developed a Conservation Harvest Plan (CHP), was responsible for controlling fishing activities of members and adopting standardized monitoring and catch controls and created management boards of elected fishers.
- iv. Quota was allocated to each of the CMBs on the basis of catch history of each individual using the 1986-1993 period and standardized to 1996 quota levels. These calculations were based on landings that could be attributed to an individual licence-

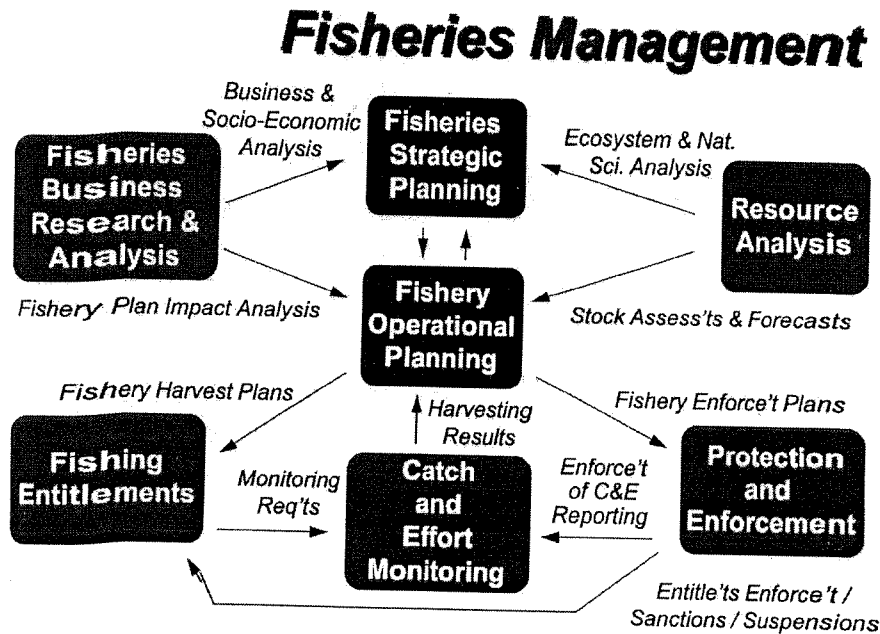
holder plus unidentified (by licence-holder) landings from processors within these various communities. This process utilized numerous input sources, including DFO, for data analysis and a mediator to resolve differences in opinion with respect to community sharing.

- v. CMBs could trade quota among communities, trade or exchange members, apply penalties for breach of violations of CHPs and generally conduct a business-like approach to fishing within the conservation umbrella demanded within the precautionary approach.

What the community management approach represented was the development and implementation of a self-governance system that did not reach down to the boat level, as is done in ITQ systems, but nevertheless represents a quasi-property approach, but at the community level.

In order to analyze the community approach and the CMBs, it is helpful to analyze management activities against a model of the planning and implementation process. Figure 4 provides a schematic representation of the type of analysis posed. While it is not intended that this paper go into the details of why this schematic was used (the details can be found in a discussion paper by Burke *et al.* 1996), needless to say the elements interrelate to create a management mosaic.

Figure 4
Schematic representation of the various elements involved in the planning and implementation of the community management boards



4. STRATEGIC ISSUES

If one compares the community management plans of 1996 and beyond with those previously prepared, one finds several strategic issues, which contributed to the success of this approach. Since the beginning of the process, plans for this sector had largely been developed through a "top down" process using DFO as the lead developer, implementer and controller, with industry relegated to an advisory role. This type of management, which was common in many countries in the late 1970s and 1980s, created an adversarial system in which little positive dialogue occurred. These readily developed situations where no climate for change existed. This was most evident among the smallest of the vessels which, while comprising 30% of the fleet, had over the years been able to effect great protection from the system thus ensuring some degree of viability at the expense of other fixed-gear groups.

The need for a bottom-up approach became evident. However, to move to the current situation several factors were required:

- i. The government needed to change its approach to management. In this instance, an internal programme review proposed a change in philosophy to a process where the government facilitated direction and assisted industry uptake.
- ii. There was the need for the industry to want to change the process, which in this case was the 1995 experiment.
- iii. Government was required to stop pandering to lobby groups, which occurred to a limited extent in this case, but was sufficient to remove the leverage of the small boat owners.

- iv. New ideas needed to be developed, which directed the industry to new avenues of approach.
- v. The industry needed organizers who could develop plans on behalf of industry and who could work together for the collective good of the fleets in question.

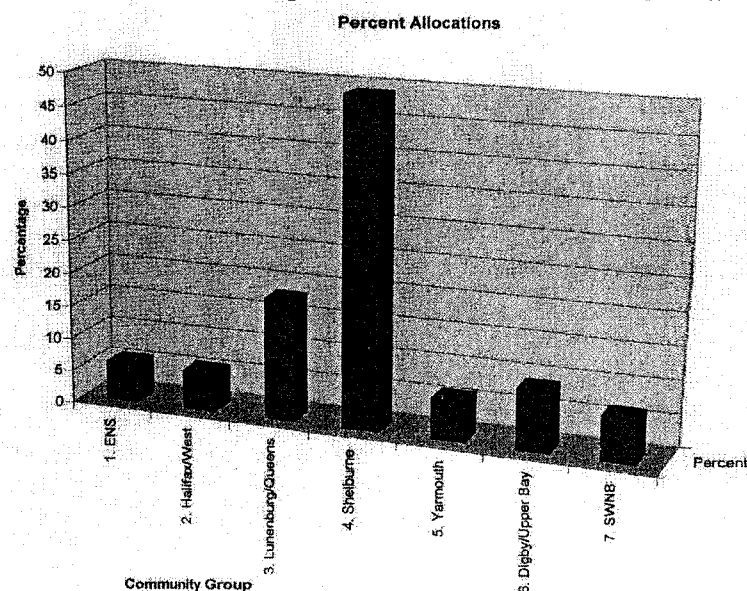
Therefore, while the plan was for something quite different, the end-result was an industry-adopted approach almost fully supported by industry.

5. ANNUAL PLANNING

As described earlier, the process involved the establishment of CMBs made up of elected industry representatives (although in one instance a non-fisher community mayor is a board member). The process of moving to these management-communities could not be described as democratic in its commonly accepted sense. Fishers by nature tend not to be participatory, either in dialogue, or through written expression. While criticism is common among fishers, as is support for election processes, the history in the Scotia Fundy fisheries shows that participation in voting procedures is not strong. In the instance of developing-communities of fishers where quota allocation would rest with assigned licence-holders, it became obvious that all licence-holders would be required to choose one of the community groups, or the default DFO group, before allocation settlement could occur. Therefore DFO forced every licence-holder into a community through a vote, with an abstention indicating the DFO group choice. In this sense, DFO forced the issue.

Once divided into groups the responsibility for developing harvest plans, which reflected social and/or economic interests, fell to the industry. Simply put, without a

Figure 5
Percent allocation of quota amongst community groups.



plan that respects conservation and delivers, at the same time, industry requirements, no fishery would occur. Industry decided on a community-basis how to deliver the conservation standards as well as the appropriate harvest and performance approach. After 15 years of commonality, suddenly there were eight plans allowing eight individual applications. Industry boards also became responsible and accountable to the membership for the performance of the fleet and the members within the fleet, which in some cases included development and administration of penalty structures.

6. ENTITLEMENTS

Role and responsibility sharing has been a constant theme in most co-management approaches now being introduced into several Atlantic Coast commercial fisheries. In the community-management approach, significant shifts in sharing of responsibilities have occurred, which emphasize the increased role of the fishers in the overall application of the fish management approach.

Within this "new arrangement", government maintains the activities of licensing, registration of vessels, identification and limitation of gear and the description of area to be fished or controlled. Many of these applications occur through DFO-administered licence conditions with delivery through DFO-enforcement.

The CMBs are now vested with the responsibility for defining entitlements on how to harvest the assigned allocation. The seven communities have taken a number of approaches, which range from a competitive fishery (by gear type) within an overall community-quota on a per species basis, to an industry-developed and delivered ITQ initiative. Combinations, or permutations, of these approaches were also used in the other community

groups. The approaches can vary and can be independent, or can work in conjunction with each other. The choice is the community's to make.

In order to get to this point, it was necessary to determine initial allocations to each community, which included dividing the initial fixed-gear under-19.8m overall quota into two distinct groups. This partitioning at 13.8m as had occurred many years earlier in NAFO divisions east of Halifax was based solely on catch history. The resultant under-13.8m-quota-allocation was subsequently divided among the eight competing management groups.

Always a contentious issue, the need to define allocations was an essential step in the process of shifting responsibility to the industry for many of the decision-making areas (Figure 5). The process of "initial allocation" utilized mediation as well as a thorough vetting through workshops and meetings. Government, in support of this process, also provided suggestions as to possible approaches, including the development of sharing possibilities. The problem with allocating quota to users is that there are normally winners and losers. In this case, the added concern of unknown catch histories further complicated this issue as all users claimed shares regardless of the source of the historical record. In the end, fishers agreed upon a sharing format using the following criteria:

- i. Cumulative catch history on an individual/per species basis by community
- ii. Unidentified landings from each community were counted as a percentage share of the community in question
- iii. Upon completion of the share calculations, apportioning involved 97% of calculated amounts, the remaining 3% was supplied to individual communities

- to address to some degree inequities that resulted in the 1995 fishery
- iv. For the Shelburne community groups, elections to determine community of choice for each fisher
 - v. Provision of transfers of quota among communities, and for instances where fishers move from one community to another, the requirement of both communities' agreement, including whether or not the catch history would move as well
 - vi. Equal shares for a portion of the overall quota.

Thus industry has moved toward establishing communities that function for the good of the members of that community and participate in the stewardship of the resource along with the government and other private and government agencies.

7. CATCH/EFFORT MONITORING

CMBs control the fleet and individual movements and restrictions through developed and implemented industry harvest-plans. Industry, in developing these plans, follows set standards and principles for conservation while at the same time devising mechanisms that deal with community needs. In all cases, where internal designs require monitoring functions, responsibility for this falls on the fisher and, or, community. To that end, the role of government in the process is to ensure that the overall conservation objectives are met and that the overall agreed community-allocations are respected. This is the government investment into the system, *i.e.* respecting and controlling overall allocations within the conservation rubric. This government audit-function ensures both conservation approaches are adopted and respected and that industry-agreed sharing occurs. The government lists and records seasonal quota-limits developed by the management boards and individual vessel-landings are provided to boards to assist in managing industry-imposed or conservation-dictated limits.

The foundation for this process is the Dockside Monitoring Programme (DMP) that is based on the entitlement. The type of management adopted (ITQ or quota-limited competitive catch), type and size of vessel, contribute directly to the level of recorded detail. DMP is a 3-step process of: (a) hail from sea, (b) verification of unloading amounts at dockside and (c), collection and data entry of catch data on a real-time basis. This service is an independent function of several companies funded by the fisher.

8. ENFORCEMENT

In addition to the monitoring of catch and quota, additional requirements to ensure the conservation of the resource are delivered through a combination of government activities and industry commitment and delivery. From the government perspective, controls involve the use of at-sea boardings, observers and sea/air surveillance to augment the hail/DMP process. Industry supplements at-sea monitoring mostly through the funding of the "at-sea" portion of the costs of observers.

From an industry perspective, in addition to the funding activities, peer-pressure has provided a significant deterrent to illegal fishing activities, including those that compromise conservation or activities that compromise industry harvest-plans. In some communities, industry sanctions have been adopted in an attempt to control illegal activities. Normally, industry boards administrate sanctions but the mechanism can vary. What is common is that all penalties, which are normally reductions in quota and/or time that can be spent at sea, are more draconian than government-penalties using court systems, and secondly all penalties are determined by the fishers. Normally in such processes there is no appeal procedure as in the formal government system, making the effectiveness quite remarkable.

9. RESOURCE ANALYSIS

One can generally assume that in such co-management applications cooperation with science requirements would be high. Fishermen do not fully understand survey techniques used by government scientists and often insist that the information is wrong because it does not reflect what is being experienced on the water. It is also true that in almost all cases fishers believe in some form of conservation. However the definition of what that is, is often difficult to determine. Therefore, in a collaborative setting, industry is often eager to provide assistance to science initiatives, particularly to advance two specific goals: (a) to better understand the resource which might translate into more quota and (b), to ensure that scientific surveys fully cover the management unit.

In the case of community-management, what has occurred to better the science-understanding? First, there has been more dialogue between scientists and industry on the subject of groundfish in the Southwest Nova Scotia area. Partially aided by an industry advisory council (the Fishery Resource Conservation Council), this dialogue has advanced the understanding within the communities of science issues and species interactions. Improved knowledge provides for a better approach to management. Second, the communities have provided additional funds to extend government surveys or have participated in the survey process. In either case, the enhanced knowledge has proved beneficial. This improved knowledge base is manifested in a science-advisory process that is more interactive and more detailed in its analysis. Specifically, community fishers participate in the Regional Advisory Process (RAP), often providing valuable comments on suggested inferences from data sets. An increased industry knowledge-base also contributes to overall knowledge that translates into better community decisions, and by understanding the process in more detail, the delivery of data by fishermen improves.

10. BUSINESS ANALYSIS

While there has been little actual analysis of the community-management approach to date, this is something that will be focused on in the near future. However, initial comments suggest that the cost of fishing has gone

up. This is largely due to transaction costs and the additional costs of setting up the systems, complete with controls. The increased cost of management appears to be due to the costs of establishing the community boards, but in the long run, savings are expected to occur as more responsibilities flow to the harvesters.

A second issue surrounds the level of participation. While the community-approach did not reduce licence numbers, the opportunity among communities to address issues in a more business-like manner has resulted in a reduction in total participation. Today, licence numbers are closer to a balance with resource and even in communities where a more socially-oriented approach of sharing has been adopted, the adjustment in participants has occurred as well. The number of active vessels in all communities fishing in the NAFO Division areas of 4X and 5Y has decreased from 1275 in 1996 to 773 in 1999 (Figure 2). Having said this, the large number of licence-holders has dictated that a solution to this resource and licence number imbalance must be found. In the highline fleets, some level of licence-stacking has occurred and the use of informal ITQ arrangements has provided for some balancing. However, in other communities, there are no mechanisms to afford adjustment outside of those identified above (*i.e.* retirement) and therefore, there is a need for a more economic solution if a balance is to be desired. In spite of this deficiency, community-management has afforded opportunities to invoke closure when community-quotas are reached.

11. ISSUES FOR THE FUTURE

In spite of the advances championed by the fishers within these communities, a number of problems persist. First and foremost is the rift among individuals and groups that support a more socially-guided fishery based on a competitive format within an overall quota, and those desiring a more economically-driven fishery using quasi-property-right mechanisms. Those in the social camp argue that community control should not allow evolution in the other direction, which they feel creates a "have vs. have-not" syndrome so widely disliked among small boat owners.

The informal quasi-property-right approach adopted by some community-management groups is also criticized by formal ITQ groups who, under the current system, must pay larger access fees to acquire individual quota. Allowing such quasi-property-right arrangements is said to be a mechanism by which the government "subsidizes" the inshore fixed-gear fleet.

The second issue surrounds the resolution of inter-community conflicts. Prior to the introduction of the community-management approach, inter-community conflicts, mainly over allocation issues, were the norm. Today one can see cooperative approaches in projects such as the Bay of Fundy Council, which is a council made up of two CMBs as well as several non-consumptive users and is dedicated to developing an ecosystem management approach in the Bay of Fundy. In addition, one sees cooperation between CMBs in the transfer of quotas and other management related issues, suggesting that the autonomy

provided by such a management system provides for ancillary cooperation benefits as well.

The third issue focuses on conservation. Has this approach changed the industry's approach to conservation positively or negatively? In most instances there have been positive responses to conservation approaches. One might say that overall, the fleet is more conservation-oriented under this system than under the previous competitive format. However, problems continue. While there has been a significant reduction in discarding and hi-grading, these practices continue at a level believed to be too high since the introduction of the Community-Management approach. Under the current management framework, this comment could apply to any fleet-group. The declines in groundfish stocks overall and the apparent imbalance in relative quotas contributes to these problems but clearly the industry continues to have some distance to go to be a fully conservation-oriented harvest sector. The husbandry of the resource, while prominent in the minds of most, can be overshadowed by the needs of survival, and in cases where there continues to be imbalance between resource and fleet numbers, the problems of conservation will continue.

12. CONCLUSIONS

The decision-making approach related to the partitioning of the resource among communities, and the flexibility within communities to devise appropriate management applications for each community group, has eliminated virtually all of the criticism and lobbying of previous planning approaches. One of the main developments of the community-approach is self-governance, an essential characteristic of formal ITQ systems.

In providing community autonomy and accountability, this approach allows for community solutions to the problems of fish management, many aspects of enforcement, transfers of quota and catch history, monitoring and conservation of the resource. Over time, remaining issues associated with the imbalance between fleet and resource will be resolved within the context of the community. To accomplish these goals there has been an increased cost-burden on both government and industry. However, as efficiencies continue in the process, we expect that both government and industry will realize significant savings while at the same time benefit from a more enlightened management system that is flexible, being able to change as time and conditions dictate.

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