

"WHY NOT MANAGE THIS FISHERY OURSELVES?"
A BRIEF ANALYSIS OF HARVESTING CAPS AS A
MANAGEMENT REGIME IN THE NORTHEAST
NEWFOUNDLAND AND LABRADOR
INSHORE SHRIMP INDUSTRY

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**“Why Not Manage This Fishery Ourselves?”:
A Brief Analysis of Harvesting Caps as a Management Regime in the Northeast Newfoundland
and Labrador Inshore Shrimp Industry**

by

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The method by which allocations are distributed in the inshore shrimp fishery in Shrimp Fishing Areas (SFA) 5, 6 and 7, on the northeast coast of Newfoundland and Labrador is a set of "harvesting caps" allocated after the setting of a Total Allowable Catch (TAC) by the Department of Fisheries and Oceans. This system has been in place since temporary permits to harvest the catch were made permanent in 2007. Caps are viewed theoretically as allowing harvesters and managers to come together in making decisions regarding the harvest, allowing a sense of autonomy and cooperation, while also helping avoid some of the theoretical issues facing other allocation regimes. This paper revisits harvesting caps in this fishery four years after the regime's implementation and suggests that harvesting caps may be bringing issues of their own to the industry. An approach aimed toward co-management, while also ensuring the state is incorporated, may better serve the industry in ensuring the resource is harvested responsibly for all involved.

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1.0 Introduction

This paper examines the current allocation system of harvesting caps for the inshore northern shrimp industry in northeastern Newfoundland and Labrador, namely in shrimp fishing areas (SFA) 5, 6 and 7. Caps are set based on a total allowable catch determined by the Department of Fisheries and Oceans (DFO) that is then redistributed as a series of caps by the Fish, Food and Allied Workers (FFAW) Union and its members. The main focus of the paper is to re-evaluate the current system's effectiveness as an alternative to more common management regimes of individual quotas and individual transferable quotas, and raise questions regarding an apparent flaw of competitiveness in the regime. This flaw is due largely to the debate regarding open access and a failure of theorists to delineate common property and open access as not one ideological framework but as two separate theoretical bases for looking at a resource.

What follows is a brief discussion of northern shrimp, the inshore northern shrimp industry in northeastern Newfoundland and Labrador¹ and current harvesting methods. This is followed by a description of the current system of allocations and harvesting caps and a discussion of contemporary resource theory that focuses on questions of property, and how common property and open access have become merged into one in theoretical debate. The paper then uses alternative management regimes of individual quotas (IQs) and individual transferrable quotas (ITQs) to illustrate more common resource management regimes but argues

¹ While a small inshore fleet did begin in the late 1970s, and continues to fish present day, harvesting in the Gulf of St. Lawrence and Scotian Shelf areas (4S and 4R), the majority of the inshore fleet, and the portion that is subject to this paper, expanded in the mid- to late-1990s with the issuance of temporary licenses in shrimp fishing areas 6 and 7. This latter fleet began after a number of experimental fisheries and scientific surveys to determine the potential of a commercial fishery for northern shrimp after the collapse of the northern cod stocks. These licenses were later made permanent in 2007. The Gulf and Scotian Shelf fisheries have existed since the 1970s and are harvested from vessels <100', whereas the northeastern Newfoundland and Labrador inshore fishery operates from vessels <65'. These fisheries are important but operate under individual quotas rather than harvesting caps and are thus exempt from the focus of this paper, operating as a separate fleet in separate shrimp fishing areas.

these regimes also bring issues that cause problems for both harvesters and the market. The paper concludes with a brief for co-management and how such a regime can help relieve some of the pressures and issues caused by the current system of harvesting caps.

2.0 The Inshore Northern Shrimp Fishery in Newfoundland and Labrador

2.1 Northern Shrimp (*Pandalus borealis*)

Though numerous species of shrimp are harvested worldwide, this paper examines one particular species and fishery, namely the inshore fishery for northern shrimp in shrimp areas 5, 6 and 7 in northeastern Newfoundland and Labrador. Northern shrimp (*Pandalus borealis*) is one of the main shellfish harvested in areas of Newfoundland and Labrador, though the species is also fished in other areas of the Atlantic and Pacific Oceans.

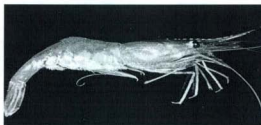


Figure 2.1: Northern shrimp (*Pandalus borealis*)

(Source: Department of Fisheries and Oceans 2007a)

Northern shrimp can be found in the Atlantic Ocean in the Gulf of St. Lawrence, on both the Nova Scotia and Newfoundland and Labrador coasts, in the Davis Strait, the Gulf of Maine, east of Greenland, and in the northeast Atlantic including the Norwegian, Barents and North seas. The species can be found in the Pacific Ocean off Japan as far north as the Bering Sea and

from the Aleutian Islands south to the Washington-Oregon coast, as indicated in the graphic below (Department of Fisheries and Oceans, 2009b).

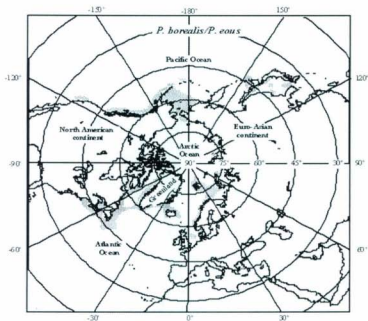


Figure 2.2: Location of Northern shrimp world-wide

(Source: Department of Fisheries and Oceans 2007a)

Pandalus borealis is a cold water species and, in the Atlantic, thrive in temperatures varying from 2°C to 6°C. Shrimp are most commonly found in areas where the ocean bottom is soft and muddy (Department of Fisheries and Oceans, 2009b). While approximately 30 different species of shrimp are found in Canadian waters, DFO states that northern shrimp is the most abundant of these species. Approximately 97% of commercial shrimp fishing consists of

northern shrimp harvesting (Department of Fisheries and Oceans, 2009b). Northern shrimp has been fished commercially in Canada for over 40 years (Department of Fisheries and Oceans, 2009b) and the beginning of the northern shrimp industry in Newfoundland and Labrador is attributed to government exploratory work in the late 1960s. Since the 1960s and 1970s the northern shrimp fishery has continued to increase in value² and Canada is the world's leader in shrimp production (Department of Fisheries and Oceans, 2009b).

2.2 Harvesting Northern Shrimp in Northeastern Newfoundland & Labrador

Northern shrimp have been harvested in Canada since the 1970s. Northern shrimp are landed fresh or frozen. After shrimp have been caught they are often sent to a processing plant for cooking and peeling. This production can also take place on the trawlers if they are equipped for such, as are many offshore trawlers that stay at sea for over a month (Department of Fisheries and Oceans 2009b). The best harvesting grounds for northern shrimp exist at a depth of over 100 fathoms and hold a bottom water temperature of 4 to 6 degrees Celsius³ (Sinclair 1985:65). While the aforementioned trawlers take part in a large part of Newfoundland and Labrador's shrimp harvesting industry, shrimp are also harvested from vessels that range up to 100 feet in length. Newfoundland and Labrador's inshore shrimp fleet, the fleet that is the focus of this paper, falls into this category, though the northeastern fleet consists of vessels <65 feet only.

² DFO states that the value of the shrimp industry increased from \$230 million to \$350 million between 1997 and 2005. For an illustration of how the industry has grown in value in recent years see Appendix II.

³ Shallower depths bring a larger instance of smaller male shrimp, as shrimp begin life as males and mature and mate into their third year. During this time shrimp molt and growth until they lay eggs in the fourth year. Mature females are the shrimp targeted by the commercial Newfoundland northern shrimp industry (Sinclair 1985:65-6).

The majority of these vessels are between 50 and 65 feet. Vessel size and weather conditions usually mean the fishery operates from early April to October (Department of Fisheries and Oceans 2007a). DFO defines the operations of shrimp enterprises as being “based out of ports in NAFO divisions 2J3KL and are established based on area of residence, by NAFO division in the following manner; 2J, 3K north (north of $50^{\circ}30'N$), 3K south (south of $50^{\circ}30'N$), 3L, 4R and 4S. The majority fish in SFA 6 and 7 with some effort in SFA 4 and 5” (Department of Fisheries and Oceans 2007a).

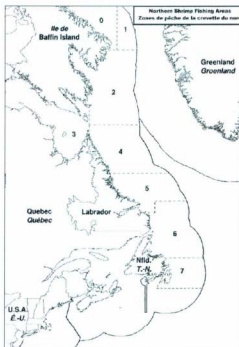


Figure 2.3: Northern shrimp fishing areas

(Source: Department of Fisheries and Oceans 2007)

These vessels are equipped with trawls (Department of Fisheries and Oceans, 2009), described as “a hydraulically powered trawl with mesh smaller than that used to trawl for other species such as cod (Sinclair 1985:84). The trawl is similar to a large bag that is tapered at one end. It is dragged along the sea bottom with one end open. The mesh is sized as to ensure mainly the target species is caught (Sinclair 1985:84-5). These nets are made from polyethylene twine and are kept to the seabed by heavy discs. Aluminum floats keep the “mouth” end open (Sinclair 1985:85). Two “doors” keep the sides apart as they are released from both sides and dragged along the front of the trawl (Sinclair 1985:85). Tows can last for four to five hours (Sinclair 1985:91).

Since 1997 trawls are required to be equipped with a Nordmore Grate, a device allowing larger fish to be released through the top of the grate in an effort to reduce the negative effects shrimp trawling may have on the biomass of other species. Smaller shrimp are retained in the end of the trawl while larger species that may be picked up as bycatch are able to make their way through the top of the trawl. DFO insists mortality of other species has been notably reduced since the Nordmore grate was made regulation (Department of Fisheries and Oceans 2009b).

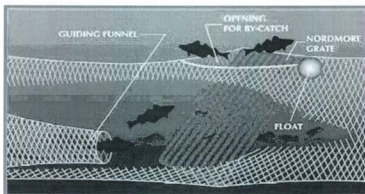


Figure 2.4: Diagram of shrimp trawl using a Nordmore grate

(Source: Department of Fisheries and Oceans 2007a)

To ensure the fishery is harvested in a manner that is both sustainable and responsible, DFO sets out a number of management measures that govern how the industry operates. As the northern shrimp fishery operates under a policy of limited entry licensing, understanding the terms “license,” “total allowable catch,” “quota” and “harvesting cap” is crucial to understanding how the harvesting sector of the industry is managed. Before examining the theoretical questions raised by the concept of harvesting caps, it is important to distinguish between the license, total allowable catch, quota and harvesting cap, as a thorough understanding of each term is necessary to understand how the management of the inshore northern shrimp industry occurs.

3.0 Licensing and Shrimp Allocations

3.1 Licensing Policy

The Commercial Fisheries Licensing Policy for Atlantic Canada as issued by DFO in 1996 defines a fishing license as "an instrument by which the Minister of Fisheries and Oceans, pursuant to his discretionary authority under the *Fisheries Act*, grants permission to a person including an aboriginal organization to harvest certain species of fish or marine plants subject to the conditions attached to the license" (Department of Fisheries and Oceans 1996). It is important to note that this definition also states that such a privilege is not a permanent one, is temporary and is not a right or property. Renewal of this privilege is not guaranteed.

The Commercial Fisheries Licensing Policy for Eastern Canada contains guidelines that cover the licensing of individuals operating in fisheries using vessels <65', including the majority of the inshore northern shrimp fishery. These guidelines state that: a license can be issued to an individual fish harvester only⁴; license holders are required to fish their licenses personally; only one license per species can be held by a fish harvester⁵; the holder of the license or the operator can authorize, in writing, and offer the request to a fishery officer or other Departmental employee for approval, another person to utilize the license or use of the license on another vessel only when circumstances are beyond his control; and, in the case of illness that prevents the harvester from utilizing his license and upon receiving medical documentation stating such, a license holder may designate a substitute operator⁶ (Department of Fisheries and

⁴ An exception can be made to issue the license to a corporation only under the grandfather clause.

⁵ Aboriginal organizations are excluded from this guideline.

⁶ Designation cannot exceed 5 years.

Oceans 1996). Transferability, in definition, is not permitted⁷. If a harvester wishes to relinquish a license he can do so only by having the license canceled. The Minister may issue a license to an individual and to that individual only. If the harvester is unable to operate the license or wishes to give the license up the license is then canceled and issued anew as a replacement.

The inshore shrimp fishery we see on the northeastern coast of Newfoundland and Labrador has grown from a fishery that began as far back as the 1970s, though in other areas of the province⁸. While a small inshore fleet did exist in the late 1970s⁹ fishing in the Gulf of St. Lawrence and Scotian Shelf areas (4S and 4R), the majority of the inshore fleet expanded in the mid- to late-1990s with the issuance of temporary permits in shrimp fishing areas 6 and 7, later made into permanent licenses in 2007. Regarding the potential of a commercial inshore shrimp fishery on the northeast coast that drew optimism in the 1990s, DFO stated,

In the 1990s, as the shrimp stocks grew in abundance and the cod moratorium came into

⁷ The Minister may, at his discretion, issue a new license as a replacement license when an old one has been relinquished.

⁸ The Gulf and Scotian Shelf fisheries have existed since the 1970s and are harvested from vessels <100', whereas the northeastern Newfoundland and Labrador inshore fishery, the subject of this paper, operates from vessels <65'.

⁹ Exploratory fisheries had also been ongoing since the late 1950s to determine the potential of harvesting northern shrimp as an inshore commercial stock in various areas. The first planned survey took place in 1957-58 under direction of the scientific personnel supplied by the Fisheries Research Board of Canada (Barrett 1972:1) and took place in selected areas, namely Gulf of St. Lawrence, by the MV Fortune Breeze, funded by the Industrial Development Service of DFO; the next survey was completed in 1967 under direction of the Industrial Development Service in the Ramea area on Newfoundland's Southwest coast by the MV Penneworth (Barrett 1972:1). In 1968-69, on northwest coast from Cow Head to Point Riche and southwest coast around Ramea, exploratory surveys took place via the MVs Penneworth and Donna Louise (Barrett 1972:1-2) and another survey took place in winter 1970 by the MV Straight Shore in St. Mary's Bay. The purpose of the latter survey was to test commercial viability of a fishery and also to test various types of gear (Barrett 1972:2). A Port aux Choix survey by three longliners in 1970 was very successful and led to 1971's fishery consisting of 19 longliners (Barrett 1972:2). The 1971 MV Alice O'Brien survey in Fortune Bay, Hermitage Bay and St. Mary's Bay, however, produced very discouraging results (Barrett 1972:2) and a 1971 Trinity Bay exploration terminated in December because of weather. Results were, however, reasonably favourable (Barrett 1972:3) though the ocean bottom was found to be too rough for dragging (Barrett 1972:27).

effect, temporary inshore licenses were introduced throughout Atlantic Canada giving priority access to the under 65 feet fleet and to aboriginals. A three-year plan was announced in 1997 with significant quota increases for both the offshore and temporary inshore licenses. The Total Allowable Catch (TAC) has doubled since the late 1990s, rising from 85,000t in 1998 to over 160,000t in 2007. In 2006, DFO announced that additional access to the shrimp fishery would be frozen to encourage stability in the short term. Additionally, in 2007, temporary licenses were converted to regular licenses in an effort to further promote stability in the inshore fleet (Department of Fisheries and Oceans 2009).

Requirements to be licensed are found in the Fisheries Act¹⁰. In the early years, the shrimp industry taking place in the Gulf and Scotian Shelf regions was placed under the policy of limited entry licensing in 1976¹¹. Harvesters knew the industry was increasing in value and feared overcrowding. The offshore shrimp industry had already attempted to allay the same fears. To attempt fleet reduction in the offshore fleet a utilization clause was added to the licensing policy that stated a harvester must have had landed at least 70, 000 pounds of shrimp in 1978 to retain his license in upcoming years (Sinclair 1985:67). In later years the policy for the shrimp industry has followed suit with other fisheries policies and has become much more sophisticated and managed. The inshore shrimp fishery on the northeast coast, according to DFO, is conducted on a competitive basis with trip limits and harvesting caps determined and subsequently managed by the industry (Department of Fisheries and Oceans 2007a). Licensing

¹⁰ This Act is currently under revision.

¹¹ Access to the fishery had previously been open access, meaning there were no limits on how many vessels could participate or how much of the resource could be harvested. Limited entry, according to DFO, "refers to those fisheries where the total number of licences is limited" (Department of Fisheries and Oceans 1996). Harvesters now had to apply for, and be granted, access to the resource through the state.

for northern shrimp has been restricted to core fish harvesters¹² who own a registered vessel and who meet eligibility requirements laid out in the Commercial Fisheries Licensing Policy for Atlantic Canada (1996)¹³.

3.2 Total Allowable Catches

DFO is responsible for setting the annual Total Allowable Catch (TAC)¹⁴. In doing so, DFO aims to “use[s] Total Allowable Catch (TAC) in an effort to control the exploitation rate index (catch (t) / fishable biomass from the previous year) which is a proxy for fishing mortality” (Department of Fisheries and Oceans 2009). DFO monitors the state of northern shrimp stocks by analyzing information obtained from harvesters, such as the number of males versus the number of females harvested and total distribution of effort. Landings to processors are also taken into account.

DFO also conducts its own independent surveys to help garner a firsthand look at shrimp stocks. This information allows DFO to determine a Total Allowable Catch that is both ecologically sustainable and able to help maintain the industry. Department of Fisheries and Oceans stock information indicates that northern shrimp stocks are in good condition. DFO indicates that overfishing is not an issue; stocks of cod and redfish, main predators of northern shrimp, have declined considerably since the 1990s; and environmental conditions seem to

¹²To be qualified as a core fish harvester a new entrant to the industry must be a certified professional fish harvester, meet the criteria to be considered full-time or as a new entrant under the Bonafide policy. Newfoundland is an exception where the Level II Grandfathering criteria must be met (Department of Fisheries and Oceans 1996).

¹³Licensing policy in the Newfoundland and Labrador Region presently prohibits the issuance of new commercial otter and beam trawl shrimp permits (Department of Fisheries and Oceans 2007a).

¹⁴For a history of Total Allowable Catch allocations in the northern shrimp industry see Appendix I.

favour the survival of shrimp (Department of Fisheries and Oceans, 2009).

3.3 Quota Allocations and Individual Quotas

Fisheries for other lucrative species in the northeastern Newfoundland and Labrador fishing industry, such as snow crab, operate under a different allocation regime than that of the northeastern northern shrimp fishery. These other species are allocated as a series of individual quotas. Copes (1986) defines the individual quota as, "A fixed share of the catch allocated in advance to individual operators (i.e., recognized fishermen, fishing units or fishing enterprises). Allocations may be made for a single season (e.g. year), for a longer period, or in perpetuity" (Copes 1986:279). Whereas open access drew out questions of overcapacity and overharvesting in a fishery that is common property, these allocations attempt to allay these worries by placing individual property rights on the resource. Licensing limits the inputs in a fishery to control the harvest. Introduction of such management tools as individual quotas control the output. This would, in rationale, put an end to the "race to the fish" that could result if allocations were simply set as an overall total allowable catch that, once reached, would signal the end of the harvest. Total allowable catch runs the risk of a build-up of competitive fleets, severe overinvestment in manpower and equipment at the individual level (Copes 1986:279). Individual quotas attempt to slow down this race and allot a percentage of the TAC¹⁵ to individual fish harvesters or enterprises.

Copes states that the main perceived benefit of introducing individual quotas to a fishery is the elimination of potential diseconomies that come with open access and limited entry licensing. The benefits include elimination of the desire to race for the fish before the TAC is

¹⁵ Individual quotas are, according to Copes, usually a percentage of the TAC and dictate the quantity of the TAC a harvester may take. While it is a percentage it is usually given as a set amount (Copes 1986:279).

closed. The rationale is that fish harvesters will spread effort optimally over the season and use manpower and equipment optimally. This will reduce the need for overinvestment. Safety will also be paramount as fish harvesters will no longer feel the need to fish in bad weather conditions. The risk of gluts would also be lessened and harvesters would be able to take advantage of patterns of demand in the marketplace (Copes 1986:280). As individual quotas are a form of property rights some proponents argue that one innate benefit of property rights should be the ability to transfer, by lease or sale, all or a portion of these rights to others. It is this question of transferability that brings forth potential problems that are often discussed when these management regimes are considered.

Quota allocations in the inshore northern shrimp industry do not follow the same path as allocations for other lucrative species, such as snow crab. Whereas snow crab follow a system of Individual Quotas (IQs) that are granted to individual enterprises, quota allocations for northern shrimp are granted by harvesting area and are managed by the industry in a series of "harvesting caps."

4.0 Shrimp Allocations in Northeast Newfoundland and Labrador

4.1 The Northeast Newfoundland and Labrador Shrimp Cap System

The inshore northern shrimp industry in northeastern Newfoundland and Labrador waters is managed as a competitive fishery by DFO. Beyond the setting of the Total Allowable Catch and fleet shares, allocations are managed by the industry via a management tool described as industry-managed harvesting caps¹⁶. When the Total Allowable Catch (TAC) is set harvesting caps are distributed by key players within the industry, namely the Union and the province's processors who are involved through the collective bargaining agreement.

This system, now in place as the current management regime, allows the FFAW to distribute the TAC as set by DFO as a series of harvesting 'caps' between a fleet in which the TAC is divided and subsequently over-allocated amongst licensed harvesters in a fleet. A system of caps refers to a practice ensuring a resource is harvested to its full potential while attempting an equitable share amongst harvesters. In over-allocating the quota and dividing this allocation equally amongst users, managers take into consideration that harvesting caps will likely not be exhausted (numerically) by the time the season is closed and the TAC is reached.

¹⁶ It is worthy of note that, since the beginning of the inshore fishery through the initial issuance of temporary permits, DFO stated that, "In accordance with the principles developed in consultation with industry, all allocations since 1997 have been provided on a temporary basis, based on the "last in, first out" (LIFO) principle. In other words, should there be a decline in the abundance of the resource in the future; quota allocations will be removed from the fishery in reverse order of their application" (Department of Fisheries and Oceans 2007a).

Tonnage is thus left in the water, in theory, when in reality the resource has been over-allocated initially. Individually, each harvester is able to fish and be paid up until the exhaustion of the individual cap, with trip limits set on how much can be landed at a time. Each cap comes with a set overall tolerance on each trip limit that is agreed upon in the collective bargaining agreement by the FFAW (the tolerance has generally been set at 10,000 lb) and is a cushion for the season (over-allocation). When the TAC has been fished to 100% the fishery is closed by DFO, despite the amount of caps set usually resting at 110% or 120% of the TAC as to provide the aforementioned 'tolerance' and to push for high harvesting output (Decker 2011).

The decision to move the Eastern Newfoundland and Labrador shrimp fishery to a system of caps stemmed from the early days of the fishery and problems emerging from the management of the fishery at that time. David Decker of the FFAW states that the fishery began with the first northeastern quotas in 1997 and was a competitive fishery, without licenses, and open to any harvester who geared his vessel for the fishery (Decker 2011). The first few years of the harvest, however, proved problematic. Too many harvesters were landing too much shrimp and glutting plants.

Fish harvesters on the northeast coast were accustomed to a system of Individual Quotas used in fisheries for other species (i.e. snow crab). Decker asserts that introducing a system of IQs brought forth three problems: firstly, the most prominent problem with introducing a licensing system of IQs, as was being used in the shrimp fishery on the northwest coast, was the licensing fee. A license for a competitive fishery (i.e. one operated under harvesting caps) costs a harvester \$100, whereas fees paid by offshore northern shrimp harvesters operating under a system of enterprise quotas equal \$67.50 per metric tonne of quota. Thus, if the inshore fishery operated along the same management regime, the costs to a harvester being issued a quota of

100-250 metric tonnes would be staggering for such a small enterprise; secondly, the issue of inflexibility offered by IQ systems posed the second problem. Decker adds that a move from an open, competitive fishery to IQs would mean fish harvesters would have no movement whatsoever on their quotas and, in the case of a fish harvester being unable to harvest his quota, the only options would be to introduce ITQs or leave the catch in the water (Decker 2011); finally, enforcing the harvest posed the third problem. While the fishery operated on what Decker refers to as the "Gentleman's Agreement"¹⁷, the industry felt this could only last for so long (Decker 2011).

The question was then asked, "Why not manage this fishery ourselves?" (Decker 2011). Representatives from each of the five fleets included in the northeast fishery (4R, 2J, 3K north, 3K south and 3L) along with members of the FFAW all voted unanimously for a system of shrimp caps that would see the quota divided in that each harvester is granted a cap for the season and, beyond that cap, he is not to be paid for any further catch. A harvester can keep fishing but will only be paid to the amount of the cap he is granted. Thus, fees are kept at a minimum and the Union and fleet committees are able to adjust or bump caps throughout the season if they see fit.

The committees negotiated the system with processing companies to include the system as part of the collective agreement that governs the Union's workers. The companies added their own input and, in their interest, asked that trip limits be enforced to avoid previous instances of gluts. These trip limits are enforceable through the collective agreement (Decker 2011).

Along with the agreement the Union and harvesters developed both a database set up to

¹⁷ The "Gentleman's Agreement" simply refers to an informal agreement between a number of parties. Decker refers to the "gentleman's agreement" in the industry as being one of an honor system that went unquestioned between harvesters, the union and processors.

manage the caps and to manage any tolerances¹⁸ a harvester may have regarding his cap and a website where a harvester is able to plug in his landings and find out the totals and tolerances for his caps and trip limits. Both of these initiatives were developed by the Union in conjunction with input from harvesters (Decker 2011).

Decker says that over the period since the cap system has been introduced over \$40, 000, 000 has been saved in fees. Likewise, compliance has been positive as there have been no legal charges in courts as the “rules are ours” to enforce (Decker 2011). Timely reporting by the Union and harvesters has led to this system working well, as the Union will report to a company that a harvester is in a potential “overrun” situation if the situation arises.

¹⁸ To see the allocated caps and tolerances for 2010 (and previous years) refer to the FFAW's website at <http://www.ffaw.net/page/2010%20Yearly%20Harvesting%20Cap%20Summary.htm>

5.0 Issues With Harvesting Caps and Individual Quota Regimes

5.1 Why Use Harvesting Caps? The Debate Surrounding Individual Quotas and Individual Transferable Quotas

As discussed by Decker (2011), avoidance of the issues presented by other regimes, such as individual quotas, was the key reason harvesting caps were put in place to manage the newly-emerging inshore northern shrimp industry on the northeast coast of the province. Individual quotas (IQs) have been put in place as a management tool in numerous other lucrative fisheries in Newfoundland and Labrador, such as snow crab. Copes (1986) defines the individual quota as, "A fixed share of the catch allocated in advance to individual operators (i.e., recognized fishermen, fishing units or fishing enterprises). Allocations may be made for a single season (e.g. year), for a longer period, or in perpetuity"¹⁹ (Copes 1986:279). Whereas open access draws out questions of overcapacity and overharvesting in a fishery that is common property, these allocations attempt to allay these worries by placing individual property rights on the resource. Licensing limits the inputs in a fishery to control the harvest. Introduction of such management tools as individual quotas control the output. This would, in rationale, put an end to the "race to the fish" that could result if allocations were simply set as an overall total allowable catch that, once reached, would signal the end of the harvest. Total allowable catch runs the risk of a build-up of competitive fleets, severe overinvestment in manpower and equipment at the

¹⁹The maximum a license, and thus an allocation, can be held in Canada is a maximum of 9 years.

individual level (Copes 1986:279). Individual quotas attempt to slow down this race and allot a percentage of the TAC²⁰ to individual fish harvesters or enterprises.

Copes states that the main perceived benefit of introducing individual quotas to a fishery is the elimination of potential diseconomies that come with open access and limited entry licensing. The benefits include elimination of the desire to race for the fish before the TAC is closed. The rationale is that fish harvesters will spread effort optimally over the season and using manpower and equipment optimally, reducing the need for overinvestment, and safety will also be paramount as fish harvesters will no longer feel the need to fish in bad weather conditions. The risk of gluts would also be lessened and harvesters would be able to take advantage of patterns of demand in the marketplace (Copes 1986:280). As individual quotas are a form of property rights some proponents argue that one innate benefit of property rights should be the ability to transfer, by lease or sale, all or a portion of these rights to others. It is this question of transferability that brings forth potential problems that are often discussed when these management regimes are considered.

Transferability of quotas has been a topic of much debate and is one of the main issues raised by theorists when assessing the value of individual quotas as a management tool. Defining a resource as 'property' through institution of quotas brings the potential that transferability can allow such consequences of 'ownership' to occur. This ownership is what has developed quotas into market commodities to be either fished or traded for profit. Arguments both for and against transferring quotas most often weigh in on the experiences of numerous fishing regions in using Individual Transferrable Quotas.

Kingsley (2002) argues that ITQs allow a harvester to harvest freely, within a quota

²⁰Individual quotas are, according to Copes, usually a percentage of the TAC and dictate the quantity of the TAC a harvester may take. While it is a percentage it is usually given as a set amount (Copes 1986:279).

constraint, while also aiming to maximize net return in making the quota negotiable to the harvester in regards to buying and selling (Kingsley 2002:649). "In practice," Eythorsson states, "ITQ-management means turning catch quotas into a market commodity and a development of private property rights to the resources" (Eythorsson 1996:269). Private property rights are established and quotas become the property of fish harvesters²¹. These quotas are shares of the Total Allowable Catch (TAC) that is set by a governing body, of which DFO is the body responsible for such allocations in Canada. Fish harvesters are granted a permanent share of this allocation that is theirs to catch, lease²², sell or transfer as an independent commodity. Transfers can be permanent or can be leases for a fixed amount of time. Those who argue for individual transferrable quotas argue that such transferability is a solution to avoiding H. Scott Gordon's predicted dire consequences of a common resource. The argument is that competition for the resource will lead to overcapitalization and overcapacity in the harvesting sector. These consequences were also addressed by Garrett Hardin (1968) who coined the term 'tragedy of the commons'²³ to describe the tendency for overcapacity and overexploitation to result from open, unregulated, access to a resource. Ownership of quotas should, in theory, offer an incentive for fish harvesters to have long-term health and sustainability of the stock in their interests (LeDrew

²¹ Some variations exist. The Icelandic Fisheries Management Act of 1990, for example, implements ITQs but also states that quotas are national property and rights are to the harvesting, not the resource (Eythorsson 1996:272).

²² Leasing usually falls in one of four categories: quota exchange, or exchanging quotas of different species between vessels; contract fishing, or long-term contracts between vertically-integrated companies with quotas and vessel owners without quotas that obligate harvesters to ensure the catch is delivered to the company for processing; quota pooling, another variety of contracting where the vessel owner does have quota but thus increases his quota; and direct leasing, where quota is leased by boat owners, from the quota owner or a mediator, at market price (Eythorsson 1996:273).

²³ This theory is based on the assumption that, by making resources private property, managers are able to eliminate the negative effects of open access, namely exploitation of stocks beyond capacity. Gordon stated that, "Most of the problems associated with the words 'conservation' or 'depletion' or 'overexploitation' in the fishery are, in reality, manifestations of the fact that natural resources of the sea yield no economic rent" (Gordon 1953:124). Similarly, Feeny et al. state, "Privatization usually provides incentives for rational exploitation of the resource. If the owner has property rights in the resource and those rights are tradable, both the costs and the benefits will accrue to the same owner and will be reflected in the market price of the resource, giving the owner the pecuniary incentive to refrain from destructive use" (Feeny et al. 1990:9).

4).

The ITQ model assumes theoretically that private property rights create an incentive to harvest in a way that is sustainable and responsible; that transferability will eventually result in a state of equilibrium (Chavez 2008:570) and "full economic efficiency" whereas the most efficient fish harvesters remain and have bought out less efficient fish harvesters; increased efficiency brings the possibility of collecting larger resource rent²⁴ from the fisheries once stocks are at optimal size and fishing effort is at an optimum level; that resource rent can be distributed in a number of ways, including a build-up of private capital to be invested in other sectors of the economy or by taxing the rent by charging for resource rentals that can be later redistributed to less efficient fish harvesters to improve their economic condition; that market prices for quotas will be indicative of the resource rent generated by a fishery, or expectations for future rent²⁵ in the case of permanent transfers; and, a fishery in optimal condition is more profitable and thus crews have a better bargaining position (Eythersson 1996:270-1). The basic premise of the system is, according to Wingard, that the rationalizing powers of the free market will push until "the strong will buy out the weaker. Shares will go to the lowest cost or more efficient producers. Inefficient fishers will be driven from the market" (Wingard 2000:49).

Yet, it is exactly this type of economic rationale that some fisheries managers say is the downfall of the ITQ system, and transferring of quotas in general. There are many fisheries managers and economists who argue that transfer of quotas is not a potential economic savior for fisheries but is a method of allocation that bring externalities over the long term. The most obvious of these effects is, as per the inherent economic rationale of transferable quotas, small

²⁴"Resource rent" is an economic term used similarly to the term "land rent" in agricultural economic literature. Both terms refer to the market rent landowners collect from tenants on different qualities of land, with productive areas bringing in the largest rent (Eythorsson 1996:270-1).

²⁵Declining stocks generate less rent while stocks that are growing and in optimal condition produce higher rent.

scale fish harvesters are often forced out of the industry as quotas are bought up by more profitable, large scale enterprises or companies. Referring to Copes (1994), LeDrew states that, "When quotas are transferable, individuals or companies with sufficient financial resources can buy up quota from other holders, resulting in a progressive system of monopolization that is the inevitable growth of capitalism" (LeDrew 6). Thus, as quotas are bought up by the most profitable operations, fears of concentration of ownership and vertical integration rise.

Questions of distributional equity also rise as some boat owners are usually grandfathered into a new quota system, meaning they are granted quotas at a low cost, if any cost at all, based on their prior participation in the fishery before it was enclosed and allocated by quota systems. Other new entrants and new applicants for quota are required to pay high amounts for access to a fishery, which is not always financially feasible for a fish harvester who may not have been able to accumulate enough personal capital to invest in a new enterprise. Similarly, as is most obvious in the case of Iceland's operation under ITQs, an increase in quota volume that is transferred has resulted in lease prices rising, often despite declining stocks. Eythorsson argues that this is classic supply and demand, as high prices stem from low supply (Eythorsson 1996:274-5). The effect is similar to quota concentration in that smaller, more inefficient fish harvesters are thus at risk of being "squeezed out" of the industry by larger enterprises and companies if they cannot muster up the capital required to buy in to the industry or lease highly priced quotas (LeDrew 6).

Copes (2000) goes into greater detail, specifying that the problems of ITQs can be traced back to two source categories, namely management requirements of the system and behaviors induced by the system. Firstly, management requirements includes TACs that are relatively inflexible, leaving fish harvesters angered and frustrated if DFO suggests closures or reductions

may be required for conservation reasons. Fish harvesters who have left quota for the end of the season may feel the need to push harder at the beginning of a subsequent season to try and escape such an occurrence in following years. Thus, DFO may be hesitant to suggest closures or reductions despite declining stocks and fish harvesters may begin to overfish in the early part of the season (Copes 2000:7).

Secondly, Copes argues that ITQ systems include near-irreversible system commitments in that "ITQs do not lend themselves easily to a risk-averse process of experimentation" (Copes 2000:9). His argument is that the initial allocation of property rights leads to a push for subsequent alterations to these rights, such as non-transferable short-term quotas, longer term quotas, short-term rentable quotas and quotas that can be traded permanently (Copes 2000:9). He also argues that it would be very difficult to return to a state of common property once ITQ systems have been put in place as fish harvesters would likely demand a buyback program for quotas that were likely given to them for free or a very low price in the beginning of the system's implementation. This is a very undesirable position for both taxpayers and government and thus reversal would not be likely to occur (Copes 2000:9).

With regards to system-induced behaviors, the main concerns Copes refers to are quota busting; high-grading; price dumping; ratcheting of quotas; discount-driven stock depletion and data fouling. Quota busting simply refers to the difficulty in enforcing ITQ fisheries in that fish harvesters may be driven to catch beyond their quota, especially in areas where there are numerous landing sites. The result is a depletion of stocks and undue pressure on the management system; high-grading refers to the incentive to discard fish that do not meet the requirements of obtaining the highest price-per-pound; price dumping occurs when a fish harvester dumps a catch after hearing a port's price has dropped so that the catch will not count

against quota and with the hope that prices will be better on the next trip; ratcheting of quotas refers to the pressure placed on fish managers by harvesters that often results in quotas being ratcheted upward when stocks are decent but reductions in times of low stocks are unlikely due to pressure from harvesters; discount-driven stock depletion is a process of rapidly fishing the biomass of a species and using the high profits of this species to buy up quota in other fisheries, resulting in high immediate profits but with adverse effects on stocks; and, finally, data fouling is simply understating the real harvest by failing to report instances of poaching, quota busting and other such practices (Copes 2000:6-12).

Thus, it is clear that individual transferrable quotas are favorable on paper but problematic in practice. These fears are expressed often in discussions regarding quota regimes that place a sense of ownership with allocations. It is, however, possible to curtail these fears if we point out that inshore shrimp quotas in SFAs 5, 6 and 7 fall into a different category than most quotas set by DFO in that it is a cap rather than an individual allocation. While the original TAC set by DFO is then divided into quota per SFA, the final redistribution is done by the Fish, Food and Allied Workers Union that represents the province's fish harvesters. This in itself is a set of circumstances that allows shrimp caps to not fall under the heading of quotas that are bought at high costs and run the risk of being commodified. Rather, shrimp caps are distributed at a very low fee. The regime, however, brings questions of 'property' and 'access' to the fore. I argue that harvesting caps may not harbor many of the same fears regarding commodification and the creation of a 'market' for quota. Yet, this management tool creates a new set of circumstances that may open spaces for new issues to be addressed, issues surrounding the regime's ability to control access to the resource.

5.2 Harvesting Caps – The Debate Surrounding Common Property and Open Access

Enclosure of the commons through state policy, such as licensing and subsequent quota allocation regimes, is built on the theoretical arguments of H. Scott Gordon (1954) and Garret Hardin (1968) whose basic premise was that open access to a resource triggers a 'race to the fish', whereas enclosure and subsequent redistribution of the resource will garner a sense of responsibility from harvesters to preserve the resource and harvest it responsibly. By making a common property resource 'private property' one assumes a sense of ownership over the resource and thus one assumes a greater responsibility to ensure the resource is sustained.

Mansfield (2001), however, argues that this institution of property rights and management regimes is problematic. She argues, "Property theorists overemphasize the importance of property by positing a deterministic relationship between certain property regimes and socioenvironmental outcomes...property structures may influence regimes of access, but property does not determine how people will use natural resources" (Mansfield 2001:386). Mansfield contends that aiming for a sustainable resource through implementation of a particular management regime may be too simplistic. This, I argue, is one of the key issues with how harvesting caps have played out in the inshore Newfoundland and Labrador northern shrimp fishery.

The 'tragedy of the commons' argument has long been the justification for the institution of management regimes in the fishing industry. Hannesson (1991) argues that, "One of the most robust results in economic theory is the theorem that common property resources will be overexploited, possibly to the point of ultimate depletion" (Hannesson 1991:401). Overcapitalization and overcapacity are feared results of a fishery that leaves the harvest open to all and lacks limits on input. Yet, while this theory may seem straightforward it is too linear and

the fishery has illustrated that other trajectories may be at play. Mansfield makes an argument for the "tragedy of open access" (Mansfield 2001:387).

One of the more common misconceptions made by those who argue against open access is the tendency to misinterpret open access and common property with to be the same type of access. The two are not to be confused. While theorists who are guilty of this misconception connect the absence of property rights to both concepts, the concept of 'property rights' in itself is the key issue in understanding the difference between the two. Mansfield argues that common property holds cultural and institutional rules regarding use, while open access is devoid of these limitations and regulatory 'rules' (Mansfield 2001:387). As McCay and Acheson point out, "By equating common property with open access, the tragedy-of-the-commons approach ignores important social institutions and their roles in managing the commons" (McCay and Acheson 1987:34).

Thus, in failing to distinguish between the two, the tragedy of the commons becomes synonymous with the tragedy of open access, the main component of both being the "economically rational individual" who maximizes profit in the short term" (Mansfield 2001:387). Here, closing access to the commons does not necessarily stop open access from being a component of the resulting regime. Open access can still exist and the economically rational individual is not necessarily the result. Rather, how one reacts to a situation of open access is managed by forces separate from rules put in place by regulatory bodies. The individual, in this case the harvester, is affected by specific cultural, political and economic processes that may promote or constrain behaviour, the same roles and institutions pointed out by McCay and Acheson. Mansfield argues that such emphasis can open up new kinds of property relations, such as those in which multiple regimes can exist (Mansfield 2001:388).

State property managed as open access is one such hybrid regime and one in which we can encompass the current system of harvesting caps off the northeast coast of Newfoundland and Labrador.

Harvesting caps are not, as one would believe, a strictly managed regime of allocations. Unlike individual quotas, harvesting caps create a highly competitive fishery and are recognized by DFO as such. While cap limits are set per vessel, the over-allocation of the resource through these caps encourages harvesters to 'race to the fish' to harvest their share in a manner that is not spread out over the entire season. Rather, harvesters must harvest quickly for fear that certain areas may be closed in the near future. This harvesting pattern is evident in that Newfoundland and Labrador plants still experience gluts in landings during certain periods of the harvest. The competitive nature of harvesting caps results in such gluts and, despite the fact that processors have attempted to adjust to these peak times. High capital and operating costs still occur, along with excess capacity. High inventory carrying costs also result as processors must buy when product is available, during what is a short timeframe in Newfoundland and Labrador (Gardiner Pinfold 2006:27). There is a need to address these issues, given that the track record of harvesting caps has not necessarily been flawless? Mansfield (2007) offers a potential route to take. Could co-management offer the necessary tools to allow harvesters to maintain a sense of autonomy in how the resource is managed while putting a set of regulations in place to alleviate current pressures to 'race to the fish'?

The role of communities and harvesters in managing natural resources has come to the fore in contemporary debate regarding allocations and management regimes (Mansfield 2007). Terms such as 'co-management' and 'community-based management' begin to offer new direction for managers of fisheries. The value of such regimes is best illustrated with a brief

discussion of two such types of management regimes, that of community transferable quotas (CTQs) and community development quotas (CDQs). This discussion can illustrate parallels between these regimes and Newfoundland and Labrador's shrimp caps that indicate how the current system may be adjusted to best serve the industry.

5.3 The Value of Co-Management and Community-Based Management in Fisheries

A brief mention of co-management and community-based management can be valuable here in understanding the ideology behind the current system of inshore harvesting caps in SFAs 5, 6 and 7. Copes and Charles (2004) define community-based management as "a method or system of management in which harvester and community interests have a significant role in the management of fishery resources...[and] local organizations clearly define and share specific management responsibilities and authority" (Copes and Charles 2004:172). The goal of distributing authority to the community is to "devolve power from central agencies, while empowering and building capacity within communities to manage local fisheries resources in a more sustainable manner" (Thompson 2008:413). Key factors to successful community-based management regimes include active involvement and support of the wider community, legislation from government that grants authority to the community to create a community board that represents stakeholders. This board is also responsible for the designation within the community of various roles. This framework weighs in on economic, environmental and social factors in making decisions regarding the resource (Copes and Charles 2004:172). Yet, Copes and Charles also point out that distribution of the resource is then left up to the community and can be done so in a variety of manners, even as ITQs. In recent years there has been discussion

of a different type of distributional framework, that of community transferrable quotas.

Community transferrable quotas are often tied in with the idea of community-based management and are worthy of note. Community transferable quotas refer to a system of quota allocations that are granted to a geographically defined area, usually based on a historical reliance upon a fishery. Copes (1997) offers that such a system may serve as a solution to the inherent risk of concentration that comes with regular enclosure and quotas. Copes argues that regionally-based allocation systems such as community transferrable quotas may help "protect access by small fishing communities, or clusters of such communities, to locally available stocks on which they have long relied and to which they may claim a customary right of access. Such access rights...would assign community priority rights to fish harvests in a geographically defined area...the community quota normally would be available only to fishing units based in the community" (Copes 1997:8-9). Wingard argues that such quota allocations to communities grant flexibility in distribution and guarantee access to the fishery, therefore enhancing economic stability in the community (Wingard 2000:53).

Likewise, Becky Mansfield (2007), in examining the case of Community Development Quotas (CDQ) in Western Alaska, makes a similar argument to the one proposed here with regard to harvesting caps: the management regime seems to be conceptually conflicted. The regime both encloses the resource for privatization and release into the market at the same time as it attempts to redistribute the resource in a manner that is fair and keeps sustainability and socio-economic goals of harvesters in mind. The Alaskan CDQs are distributed to aboriginal communities to manage and subsequently harvest or lease as they see fit. All at once the quotas not only allow groups who may be alienated from the marketplace to have a way in but also ensures a sense of social justice in that it ensured these groups are allocated a sufficient amount

of quota to support their needs. Mansfield argues that this ideology is conflicted in that it creates a reliance on the market while attempting to protect from the market. I, however, argue that harvesting caps, if managed in a way that resembled this regime, may do the same for harvesters in Newfoundland and Labrador who are now harvesting under the cap system.

5.4 The Potential for Newfoundland and Labrador Shrimp Caps to be Adjusted to Co-Managed "Community" Quotas

Harvesting caps and Community-based quota allocations do share similarities. Community-based co-management is "a people-centered, community-oriented, resources-based partnership approach to fisheries management in which government agencies, the community of local resource users, non-government organizations, and other stakeholders share the responsibility and authority for the management of a fishery" (Thompson 2008:413). While Newfoundland and Labrador's system of managing the shrimp fishery by the cap system is not the picture-perfect definition of co-management, it is argued that shrimp caps can be considered as a skewed type of this regime, even relating to systems of self-governance²⁶. By setting the total allowable catch and then turning the distribution over to the FFAW, the federal government has allowed the fish harvesters, plant workers and other members of the Union to have a say in how shrimp caps are allocated. While the "community" does not meet and make these decisions, the FFAW represents approximately 20,000 workers in Newfoundland and Labrador (FFAW, 2011). Thus, the FFAW is seen as an appropriate representative of the wishes and needs of Newfoundland and Labrador's fishing communities.

²⁶Self-governance, according to Yang et al. (2010), refers to users managing the resource within a given framework. The framework "pushes 'fishers to decide on own operating regime but within a framework established by government that is applied to all fisheries.' Thus self-governance is about commercial participants making governance decisions" (Yang et al. 2010:262).

Yet, harvesting caps, while seemingly operating as other quota regimes in how access and allocations are restricted and limited, create problems inherent in the regime that most regimes tend to try and restrict. The largest question looming is whether harvesting caps rein in the 'race to the fish' as most property regimes do. Given that caps are over allocated the season in a particular area may be closed with very little warning if state officials feel the need. Thus, two harvesters may be granted the same cap but, depending on their choice of harvesting time, one may harvest his cap fully while the other is shut out of the area after a small number of trips. There is an inherent desire, then, to once again race to the fish as a great degree of uncertainty rests with a regime in which one's season is not guaranteed. The most commonly identified problem in the Newfoundland and Labrador fishing industry, that of too many harvesters chasing too little fish, is amplified as one would undoubtedly aim to be as productive as possible and harvest to the best of one's ability. The potential for sustainability and responsible harvesting of the resource go out the window.

According to a recent article, fishery researchers at the University of Washington argue that group management of fisheries are more likely to be sustained if using a co-management model. The system of harvesting caps as distributed by the FFAW, with minor adjustments, can be placed in this category. Their study was based on the hypothesis that government management alone is often not sufficient, namely in smaller, local fisheries as some fisheries are too small to allow sufficient government resources to be applied to them. Analyzing more than 130 fisheries in 44 countries, researchers concluded that management regimes that included both government and local fish harvesters offered a promising future. Small scale fisheries in Atlantic Canada were included in the sample studied by the researchers. In an attempt to allay age-old fears regarding allowing fish harvesters to have a say in their own stocks, co-author Ray Hilborn

is quoted in the article as saying, "Many people believe that having fishermen involved in the management process is letting the fox guard the henhouse. What (this research) shows is just the opposite, that the more involved the fishing industry is in management, the better the outcome" (Chai, 2011). The conclusions reached by the team of researchers offered that such a co-management regime must, however, include a leader who enforces guidelines, community input, and ownership over specified areas for harvest as conservation must be first and foremost. When incorporated into local fishing industries these components led to less illegal fishing behaviours, increased resources and higher profits (Chai, 2011).

6.0 Analysis

The key discussion point of this paper is that an analysis of harvesting caps as a system of resource management that is an alternative to more popular regimes, such as individual transferable quotas, opens up questions that have been asked since the beginning of regulated fisheries: namely, what is the most economically-, socially-, and environmentally-responsible method of regulating a harvest and, can a harvest be sustained under a certain regime? In comparing other quota regimes with co-management, community-based management and the current cap system that teeters on the edge of each of the latter two management regimes, we are able to gauge where this method of management falls with regards to efficiency and conservation.

These comparisons and subsequent discussion of the current northeastern Newfoundland and Labrador system indicate that, while pros and cons exist within each of the regulatory methods, a careful regulatory system defining allocations between harvesters but also allowing harvesters and their networks to have a sense of autonomy in how the resource is managed, can help diminish the race to the fish that is inherent in competitive, open fisheries. Analysis opens up a set of questions that are raised by this brief examination and questions of potential amendments that can be made to the current regime to best benefit all in the northeastern Newfoundland and Labrador shrimp industry.

The system of shrimp caps that is quasi-co-managed by the FFAW, and the harvesters it represents, has had a positive impact on the northeastern Newfoundland and Labrador shrimp industry. Yet, questions remain regarding whether or not allowing a more official co-management system of allocations brings with it the many dangers associated with other systems

enclosure, such as individual transferable quotas. Questions can also be raised regarding whether or not the current system can be adjusted to better benefit the harvesters and companies involved. In an industry plagued recently by cutbacks, price drops and tie-ups²⁷, is there a way to make the system work better for those involved?

ITQs and community-based management regimes differ in philosophy. Whereas ITQ systems rely heavily on individual gain and the marketplace, community-based management offers a role for the wider community in making decisions within the industry. ITQs are driven by market forces and aim to maximize individual or corporate profits from a resource that is "owned" and limited by the economic state of the market at a given time. Equity, conservation, community welfare and sustainability have long been considered to be in conflict with profit maximization (Copes and Charles 2004:173). Community-based regimes, however, combine human requirements with the social, biological and economic needs of a given region. Despite ITQs being hailed as one of the most profitable means of fishery management in that quotas are generally granted at little or no cost in the initial stages of allocation and then leased or sold for a large profit gain, community-based management systems in which limited entry and tradable fishing licensing are aspects of the state-managed framework can be just as profitable when the value of both quota and license are weighed together (Copes and Charles 2004:174).

It is the question of marketing these privileges that is of most importance in the majority of discussions surrounding the long-term sustainability of a fishery. LeDrew's discussion of community transferrable quotas discusses transferring quotas granted to these regions, with the transfer occurring within a group or region. He states the importance of establishing a state-managed framework that would determine the type of exchange that is permissible. These regulations would ensure that the same inherent problem of concentration that exists within the

²⁷ For a recent example of such a protest see CAW, 2009.

ITQ system does not occur on a smaller scale within the group (LeDrew 9). Fear of creating a 'market' in which the perceived value of a quota, an intangible piece of 'property', begins to concentrate wealth into the hands of a select few do not have to materialize into reality if those making the decisions have an equal interest in the harvest. While shrimp caps within the Newfoundland and Labrador northern shrimp industry are most certainly not community transferable quotas, the two systems share common threads, namely that they are both regional/divisional allocations that are not given market value and are not commoditized. These commonalities allow us to view the parallels between both that indicate a system of transferring quotas between fish harvesters within the same fleet may be beneficial.

Copes (2000) suggests that compromises can be reached by management regimes that help alleviate certain pressures of ITQ systems. He lists "trip limits" (Copes 2000:7) as one such measure, a regulation already in place by the management of Newfoundland and Labrador's shrimp industry. While Copes' argument is that such measures are against the efficiency arguments of ITQs, trip limits do, as Decker (2011) argues and I concur, help maintain an equality over the course of a fishing season. In doing so, the season is broken up and judgment is able to be made at set periods to assess stock conditions, harvesting levels, and can also help DFO and fish harvesters decide if quota will be likely left in the water. If harvesters are able to have a larger say in how these assessments take place and have greater autonomy in these decisions, the potential for Hardin and Gordon's age-old theory, that a harvester with a personal interest in a resource is more likely to harvest responsibly, becomes a closer reality.

7.0 Conclusion

A working group put in place to review the shrimp industry in 2002 -03 found that harvesting activity was not spread out over the entirety of the shrimp harvesting season but was highest in late spring, early summer. The group found that landings generally reached 'glut' status over a three month period. The high concentration of harvesting in such small periods was attributed to interest in other species, weather conditions, harvesting 'caps', higher counts and port prices. Referring to caps, specifically, the group found that in areas such as SFA 7 caps were low²⁸. Harvesters were only able to make a small number of trips before their cap had been harvested (Department of Fisheries and Oceans 2003), illustrating the point made earlier that the current system is not lessening the desire to race to the fish but is, in reality, triggering it.

Harvesting caps, as they now stand, are not a closed access fishery in the theoretical sense but are managed beyond the initial setting of the caps. While the data collection stages of the harvest are thoroughly managed through the FFAW's website and the timely reporting of processors and harvesters, the ideological failures of the regime open spaces for adjustment. Harvesting caps offer harvesters the opportunity to push for high output in the early stages of the season, rather than spreading out their efforts. The sacrifice here is the potential for harvesting at a time when shrimp are not of optimal quality. Smaller, softer shrimp bring lower prices. A greater opportunity for discarding thus opens up, as harvesters may attempt to dump poor quality shrimp in the hopes of keeping only larger shrimp that will bring higher revenue. Dumping these smaller shrimp, already dead, increases the number of shrimp taken from the water. These cast off shrimp are not recorded and this activity, though not permitted in the fishery, can occur. If

²⁸ Caps in this area have since increased but do remain lower than other areas as TACs in this inshore fishery have seen a steady decline in recent years.

this is the case, sustainability is risked.

Yet, issues such as quota busting, high grading and data fouling are more problematic within ITQ systems. These problems are inherent in allocation systems based on market value and capital. Quotas are given market value and are valuable possessions. In a cap system this is not so, as caps are redistributed to fleets, ensuring the same amount of the TAC remains within the specific fleet, and caps are not bought or leased as they still have no market value. Caps are not purchased for high licensing costs and then bartered as such, but rather are allotted by the fish harvesters and the Union that represents them. If caps remain in the same fleet there is no more danger of overfishing or overcrowding than existed in the beginning, as the same amount of product will be harvested from that SFA. The potential for concentration if more profitable enterprises attempt to 'lease' quotas is also not evident as caps are managed by the measures of harvesters themselves, not the pressures of the market.

This, combined with the fact that many fleets in Newfoundland and Labrador rely heavily on both northern shrimp and snow crab and must balance the season to harvest both species responsibly, opens a space where we can begin to ask if tweaking the current cap system may prove to be economically, biologically and socially feasible for both the industry and individual fish harvesters? Harvesters would be able to spread out the harvest and not feel pressured to 'race to the fish'. More product would be landed in processing plants in Newfoundland and Labrador that are often short on product at times, and glutted in other, and unable to provide the number of hours workers are required to work to meet the requirements of unemployment insurance benefits.

Thus, the question surrounding the harvesting cap system is whether or not the management regime can be seen as fully reaching the potential of what a system of property

rights and enclosure proposes. While proponents of enclosure of common property argue that doing so halts the tendency to fish a resource quickly and without regard, all in the name of maximization of one's fishing ability and profit, does the harvesting cap system offer the same type of roadblocks to overfishing? The answer is a resounding no. While the initial stages of quota allocations by DFO do begin to allocate the resource along the lines of a limited entry, competitive fishery, what results from the over-allocation and secondary division of the TAC into harvesting caps is a rush to gain one's portion of the harvest before the season is cut to an abrupt end. Harvesters in SFA 6 saw this occur quite early in August of 2011. In such a case some harvesters may fish their cap to finality while some others, who have held out and not fished shrimp until later in the season (gear troubles, fishing other species, etc.) may be embarking on their first trip only to find the area closed.

The 'race to the fish' is not halted but is very real. While we are seeing a greater onus in the industry in matters of sustainability and responsibility, socio-economic pressures may come to the forefront when a harvester is making a decision to harvest his catch before the next harvester gets there first. It is not, for instance, uncommon for shrimp plants to be glutted with incoming shrimp to the extent of having to put its fleet in queue and keeping vessels tied up. This is an attempt to limit the amount of catch being landed (Street, personal communication). Avoiding such gluts was one reason David Decker gave in moving the fishery in 1997 from an open, temporary fishery to a closed, competitive quota harvest (Decker, personal communication).

If community transferable quotas have proven themselves to be feasible in other regions, the question remains to be asked as to why such a management regime cannot work within the Newfoundland and Labrador fleets fishing for northern shrimp. The importance of having a

state-managed framework that governs resource management and allocations is certainly very evident. Yet, the knowledge and information harvesters possess can prove a valuable tool in how the resource can be managed in to the future as to not meet the fate of past fisheries that have collapsed beyond renewal.

The questions raised here illustrate the importance of reviewing current policies regarding allocations of northern shrimp in Newfoundland and Labrador. While the direction the industry has gone in terms of allowing allocations beyond the setting of the TAC to be handled by the industry, a review should be conducted now that this management system is beyond the initial stages. The questions opened up here offer a potential direction that fishery managers can take to keep the current allocation system and the importance of having the industry involved in allocations. There is also potential to alter the system in a way that allows harvesters to reap further gains from the industry. In a fishery that is often plagued with debate and issues, such as protests and tie-ups²⁹, co-management might be an ideal avenue for managers to take. In allowing communities and harvesters to have further autonomy in the managing of shrimp caps managers can help avoid the effects that are known to plague other quota regimes, such as quota concentration and distributional equity.

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Appendix I

A History of Total Allowable Catch (TAC) Allocations in the Northern Shrimp Industry

YEA R	DIVOA -II	DIVO A	DIVO B	HS/ UB*	DIV2 G	HOP E	CAR T	HAW KE	DIV3 K	DIV3 L	TOTA L
	SFA0	SFA1	SFA2	SFA 3	SFA4	SFA5		SFA6		SFA7	
1978	-	1,000		100	500	4,500	800	800	500		8,200
1979	-	2,000		100	500	3,200	800	1,750	500		8,850
1980	-	2,500		200	500	4,000	800	850	500		9,350
1981	-	5,000		200	500	4,000	800	850	500		11,850
1982	-	5,000		200	500	4,000	800	850	500		11,850
1983	-	5,000		850	500	4,000	800	850	500		12,500
1984		5,000		850	500	3,500	700	850	500		11,900
1985		6,120		850	500	2,800	770	850	500		12,390
1986		6,120		850	500	3,400	1,000	850	1,200		13,920
1987		6,120		1,200	500	4,000	800	1,500	1,500		15,620
1988		6,120		1,200	500	4,000	800	1,500	1,500		15,620
1989		7,520	3,500	1,200	2,580	4,400	1,600	2,000	3,600		26,400
1990		7,520	3,500	1,200	2,580	4,400	1,600	2,000	3,600		26,400
1991		8,500	3,485	1,190	2,635	4,760	1,615	2,210	2,091		26,486
1992		8,500	3,485	1,190	2,635	4,760	1,615	3,910	3,655		29,750
1993	300	8,500	3,485	1,190	2,735	4,760	1,615	3,846	5,334		31,765

1994	500	8,500	3,500	1,200	4,000	7,650	11,050		36,400
1995	500	8,500	3,500	1,200	5,200	7,650	11,050		37,600
1996	500	8,500	3,500	3,800	5,200	7,650	11,050		40,200
1997	500	8,500	5,250	3,800	5,200	15,300	23,100		61,650
1998	500	7,650	5,250	3,800	8,320	15,300	46,200		87,020
1999	500	9,350	8,750	3,800	8,320	15,300	58,632		104,652
2000	500	9,350	5,250	3,800	8,320	15,300	61,632	500	109,152
2001	500	12,040	8,750	3,800	8,320	15,300	61,632	500	115,342
2002	500	12,040	8,750	6,300	8,320	15,300	61,632	500	117,842
2003	500	14,167	8,750	6,300	13,122**	33,084**	85,585**	10,833	172,341
2004	500	14,167	8,750	6,300	10,320	23,300	77,932	10,833	152,102
2005	500	18,417	8,750	6,300	10,320	23,300	78,044	10,833	156,464
2006	500	18,417	8,726	6,300**	10,238	23,300	77,417	18,333	163,231

* HS/UB = *P. montagui*

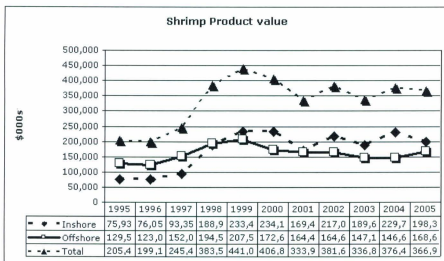
Between 1996 and 2001 there has been a 1200 t quota but a 3800 t catch limit for *P. montagui* in SFA 3. During 2002 the SFA 3 *P. montagui* catch limit was increased to 6300 t.

** The offshore licence holders requested that their quotas starting in 2003 run from April 1 - March 31 rather than January 1 - December 31, therefore the increased quotas for 2003 reflect the amount of shrimp that would have been caught under the Dec. - Jan. schedule. Please note that the change in timetable only affects SFAs 2, 3, 4, 5 & 6. SFAs 1 and 7 are still on the Jan. 1 - Dec. 31 timetable.

***In 2006 a 400 t *P. borealis* bycatch limit was set within the SFA 3 *P. montagui* fishery.

(Source: Department of Fisheries and Oceans 2007).

Appendix II

Shrimp product Value 1995-2005

(Source: Department of Fisheries and Oceans 2007)