

**The Lobster Fishery of Southwest Nova Scotia:
A Case Study of the Effects of Structural Transformations on the Allocation of
Access to a Publicly Owned Resource**

by

John David Flint

Submitted in partial fulfilment of the requirements for the degree of
Doctor of Philosophy in Sociology

at

Dalhousie University
Halifax, Nova Scotia
December 2002

© Copyright by John David Flint



National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file *Votre référence*

Our file *Notre référence*

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-79403-2

Canada

DALHOUSIE UNIVERSITY
FACULTY OF GRADUATE STUDIES

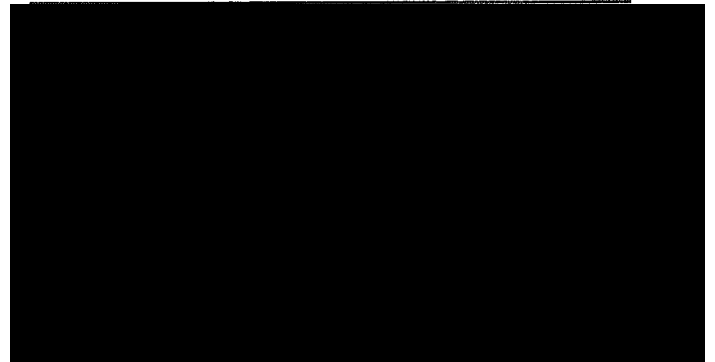
The undersigned hereby certify that they have read and recommend to the Faculty of Graduate Studies for acceptance a thesis entitled "The Lobster Fishery of Southwest Nova Scotia: A Case Study of the Effects of Structural Transformations on the Allocation of Access to a Publicly Owned Resource" by John David Flint in partial fulfilment for the degree of Doctor of Philosophy.

Dated: December 6, 2002

External Examiner:

Research Supervisor:

Examining Committee:



DALHOUSIE UNIVERSITY

DATE: 10 December, 2002

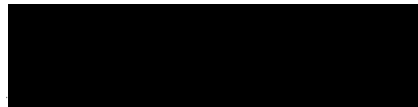
AUTHOR: John David Flint

TITLE: The Lobster Fishery of Southwest Nova Scotia: A Case Study of the Effects of Structural Transformations on the Allocation of Access to a Publicly Owned Resource

DEPARTMENT OR SCHOOL: Department of Sociology and Social Anthropology

DEGREE: Doctor of Philosophy CONVOCATION: May YEAR: 2003

Permission is herewith granted to Dalhousie University to circulate and to have copied for non-commercial purposes, at its discretion, the above title upon the request of individuals or institutions.



Signature of Author

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

The author attests that permission has been obtained for the use of any copyrighted material appearing in the thesis (other than the brief excerpts requiring only proper acknowledgement in scholarly writing), and that all such use is clearly acknowledged.

TABLE OF CONTENTS

List of Maps	vii
List of Tables	vii
List of Plates	vii
List of Figures	viii
Abstract	ix
List of Abbreviations	x
Acknowledgements	xi
INTRODUCTION	1
CHAPTER ONE	
The Research Problem: Explaining the Transformation of a 'Poor Man's Fishery'	28
Theoretical Literature Relevant to the Research: The Problem of Justice	34
Sources of Authority	39
Globalization	44
The Labour Process	46
Summary	48
CHAPTER TWO	
Geographic, Historic, Demographic and Economic Conditions in Southwest Nova Scotia	50
The Lay of the Land	50
A Brief History of Southwest Nova Scotia	51
The Seven Settlement Areas	55
The Municipality of Barrington	55
Introduction to the Municipality of the District of Argyle	58
The Pubnicos	59
Greater Argyle	62
Wedgeport - Ste. Anne du Ruisseau	64
The Municipality of the District of Yarmouth	68
The Municipality of Clare	72
The Municipality of the District of Digby	74
Southwest Nova Scotia in the Postwar Era: Population and Employment	77
Ethnic and Visible Minorities in Southwest Nova Scotia	82
The Importance of the Fisheries	83
Summary	96

CHAPTER THREE	
Research Methods	98
Level of Analysis	98
The Literature Search	100
Field Observation	103
Structured Open-ended Interviews	105
Selecting the Sample Categories	106
The Sample of Lobster License Holders	107
The Sample of License Holders' Wives	108
The Sample of Lobster Buyers	109
The Samples of Lobster Stock Assessment Scientists and Fishery Managers	110
Interview Procedures	111
CHAPTER FOUR	
Administration and Justice in the Lobster Fishery	112
A History of Lobster Management in Atlantic Canada	113
Phase One: Rapid Expansion (Early Beginnings to 1886)	113
Phase Two: The Decline (1887 - 1918)	118
Phase Three: Stabilization (1919 - 1970)	126
Phase Four: Expansion (1971 - 2001)	138
DFO Fisheries Management Today	154
Distributive Justice in Contemporary Fisheries Management	155
Retributive Justice	159
Treaty Justice: The Aboriginal Fishery	161
Summary	163
CHAPTER FIVE	
Scientific Knowledge as a Basis of Authority in Lobster Management Policy	165
The Birth of Canadian Lobster Science	165
The Incorporation of Science into the Fisheries Department	169
Restructuring and the Canadian Atlantic Fisheries Scientific Advisory Council	170
The Groundfish Crisis and the Fisheries Research Conservation Council	174
The Canadian Stock Assessment Secretariat and the Current Assessment Process	175
A Conservation Framework for Atlantic Lobster	176
The Problem with Models	185
Virtual Population Analysis	187
The LFA 34 Conservation Harvesting Plan	188
The Stock Assessment Scientists	192
LFA 34	192
LFAs 35, 36 and 38 (Bay of Fundy)	195
LFA 33	197
Methods and Opinions of the Stock Assessment Scientists	200
Summary	203

CHAPTER SIX	
Globalization and its Effect on the Lobster Market	207
The Lobster Marketing Structure	213
A Typology of Lobster Buyers	215
The Wharf Buyers	217
The Lobster Brokers	225
The Shippers	228
Summary	238
CHAPTER SEVEN	
The Labour Process: Changing Relations in Production and Exchange	241
Division of Labour in a Lobster Fishing Enterprise	242
From Generalists to Specialists	246
Redefined Relationships in the Labour Process: The Captains	248
Relationships between Captains and Lobster Buyers	256
Relationships between Captains and their Crews	259
Working Relationships between Captains and their Wives	262
The Future for Atlantic Fishing Communities	270
Summary	273
CHAPTER EIGHT	
Conclusion	276
The State, Justice, and Issues of Common Property	276
The Basis of Regulatory Authority, and the Production of Knowledge to Inform Regulatory Policy	279
Global Transformation and Local Responses	282
Labour Process, Class Differentiation, and Concentration of Capital	286
The Continuing Agency of Fishermen in the Distribution of Access to the Resource	290
The Future of Lobster Fishery Management and some Unresolved Issues in Resource Assessment and Allocation Procedures	291
Appendix A: Interview Schedules	297
Appendix B: Letters of Informed Consent and Consent Form	310
References	316

LIST OF MAPS

Map 1	The Research Area	2
Map 2	Fishing Areas Adjacent to Southwest Nova Scotia	4
Map 3	Lobster Fishing Areas in the Scotia-Fundy Region	7
Map 4	Southwest Nova Scotia	56

LIST OF TABLES

Table 1	Nova Scotia Lobster Exports in 2000: Top Twelve Destinations	25
Table 2	Canadian Lobster Exports by Product in 2000	26
Table 2.1	Population by Census Subdivision for Selected Years 1901-1996	77
Table 2.2	Highest Level of Education in 1996 as a Percentage of Population over 15 Years of Age by Census Subdivision	79
Table 2.3	Labour Force Activity, 15 Years and Older, by Census Subdivisions and Towns: 1986 and 1996	80
Table 2.4	Private Household Income and Incidence of Low Income by Census Subdivisions and Towns in 1985 and 1995	82
Table 2.5	Mother Tongue by Census Subdivision, 1996	83
Table 2.6	Landed Weights by Fisheries Statistical Districts in 1953, 1981, and 1998	85
Table 2.7	Landed Values by Fisheries Statistical Districts in 1953, 1981, and 1998	88
Table 2.8	Value of Each Species Landed as a Percentage of Total Landed Value in Each Statistical District in 1953, 1981, and 1998	89
Table 2.9	Number of Fishermen by Fisheries District, by Extent of Employment and by Major Species Fished in 1953, 1962 and 1972	92
Table 2.10	Licenses Held by Fisheries Statistical District in 1985 and 1999	94
Table 3.1	Summary of Structured Interviews	110
Table 6.1	Weight Categories for Live Lobster	228
Table 6.2	Canadian Atlantic Lobster Product Forms	237
Table 7.1	Number of Persons (Including Captains) Working on Board 29 Lobster Vessels Surveyed in 2000	259

LIST OF PLATES

Plate 1	Banding a lobster	9
Plate 2	Measuring a lobster	9
Plate 3	Filling a bait bag	10
Plate 4	Hauling traps	10
Plate 5	Unloading lobsters	12
Plate 6	Weighing lobsters	12
Plate 7	Vessels loaded for 'dumping day'	18
Plate 8	A lobster buying station	18
Plate 9	A tidal pound	21
Plate 10	An on-land pound	21

LIST OF PLATES (continued)

Plate 11	Lobster cars	23
Plate 12	Lobster storage tubes and cages	23

LIST OF FIGURES

Figure 1	Wire lobster trap	15
Figure 2	Ways of rigging lobster gear	16
Figure 2.1	Age Cohort Pyramids for Southwest Nova Scotia: 1951, 1981 and 1996	78
Figure 6.1	The Flow of Lobster from Fishermen to Consumers	239

ABSTRACT

This study documents the development of the lobster industry in Southwest Nova Scotia since its inception in the mid-nineteenth century, with an emphasis on structural changes that have occurred in the postwar period. It discusses these changes in terms of evolving conceptions of distributive justice in the fishery, an increased emphasis on scientific knowledge as a basis of authority in management, emerging pressures from the forces of globalization, and a capitalistic reconfiguration of the lobster fishing labour process. Central to the analysis is the Canadian government's newly intensified commitment to stock conservation, and its apparent retreat from social policy commitments to fishing community development. Using data obtained from structured, open-ended interviews with fishermen, lobster buyers, lobster scientists, and federal fisheries managers, the study develops typologies for fishing enterprises and categorizes the structure of the lobster market. It examines the approaches of lobster scientists as they analyze the status of lobster stocks and create 'fisheries knowledge', and the approaches of fisheries managers at different levels as they attempt to regulate the fishery fairly. The study concludes that in order to fulfill the aspirations outlined in its recently released **Canada's Ocean Strategy**, the Department of Fisheries and Oceans will have to increase its capacity to respond to issues originating in three general areas: in the lobster fishing sector; in coastal communities; and in the marine ecosystem itself.

LIST OF ABBREVIATIONS USED

AFIFA	Atlantic Fishing Industry Alliance
AFS	Aboriginal Fisheries Strategy
AHI	American Holdco, Inc.
ATP	Allocation Transfer Program
BFIFA	Bay of Fundy Inshore Fishermen's Association
CAFSAC	Canadian Atlantic Fisheries Science Advisory Committee
CALPA	Canadian Atlantic Lobster Producers Association
CLAWS	Canadian Lobster Atlantic Wide Studies
CSAS	Canadian Stock Assessment Secretariat
DAF	Department of Aquaculture and Fisheries [Province of Nova Scotia]
EA	Enterprise Allowance
FMS	Fisheries and Marine Service [Canada]
FRB	Fisheries Research Board
FRCC	Fisheries Resource Conservation Council
ICNAF	International Convention for the Northwest Atlantic Fisheries
LFA	Lobster Fishing Area
LPA	Lobster Production Area
MFU	Maritime Fishermen's Union
NMFS	National Marine Fisheries Service [United States]
NSFPA	Nova Scotia Fish Packers Association
PANS	Provincial Archives of Nova Scotia
RAP	Regional Advisory Process
SABS	St. Andrew's Biological Station
SSR	Stock Status Report
TAC	Total Allowable Catch
WNFC	West Nova Fishermen's Association
YCFGA	Yarmouth County Fixed Gear Association

ACKNOWLEDGEMENTS

Generous financial support from a Social Sciences and Humanities Research Council of Canada Doctoral Fellowship and an Izaak Walton Killam Memorial Scholarship, along with a research grant from the Faculty of Graduate Studies at Dalhousie University, made this research project possible.

Richard Apostle, my doctoral supervisor, offered me constant encouragement, insight, and inspiration, and for this I am sincerely grateful. I am also indebted to my dissertation committee members, Marian Binkley and Pauline Gardiner Barber for their careful readings of preliminary drafts of this dissertation, and for their many thoughtful comments and suggestions.

The Department of Fisheries and Oceans was an essential source of information, and department members were more than generous in providing me with data, insights, and assistance. I would especially like to thank Jim Jamieson, Ian Marshall, and Tim Surette of the Fisheries Management Branch for their help. Elaine Myers of the Commercial Data Division assisted me in locating unpublished catch statistics. Biologists Ross Claytor, Peter Lawton, and Doug Pezzack of the Science Branch helped me to understand the 'nature of the beast', and the issues surrounding lobster stock conservation. I must also thank Mary Meagher of the Nova Scotia Department of Agriculture and Fisheries for providing valuable information on the sales and export of Nova Scotia lobster.

I wish to express my appreciation to Ashton Spinney and Tim Surette, co-chairs of the Lobster Fishing Area 34 Advisory Committee for making me feel comfortable as an observer at Committee meetings. I would like to thank Bernice and Réal d'Entremont for their hospitality, and for introducing me to the wealth of historical information stored at the Musée Acadien et Archives in West Pubnico. I spent many weeks in Southwest Nova Scotia conducting field research, and I owe thanks to Mike Comeau of the Western Valley Development Authority for inviting me to stay at his home during most of that time.

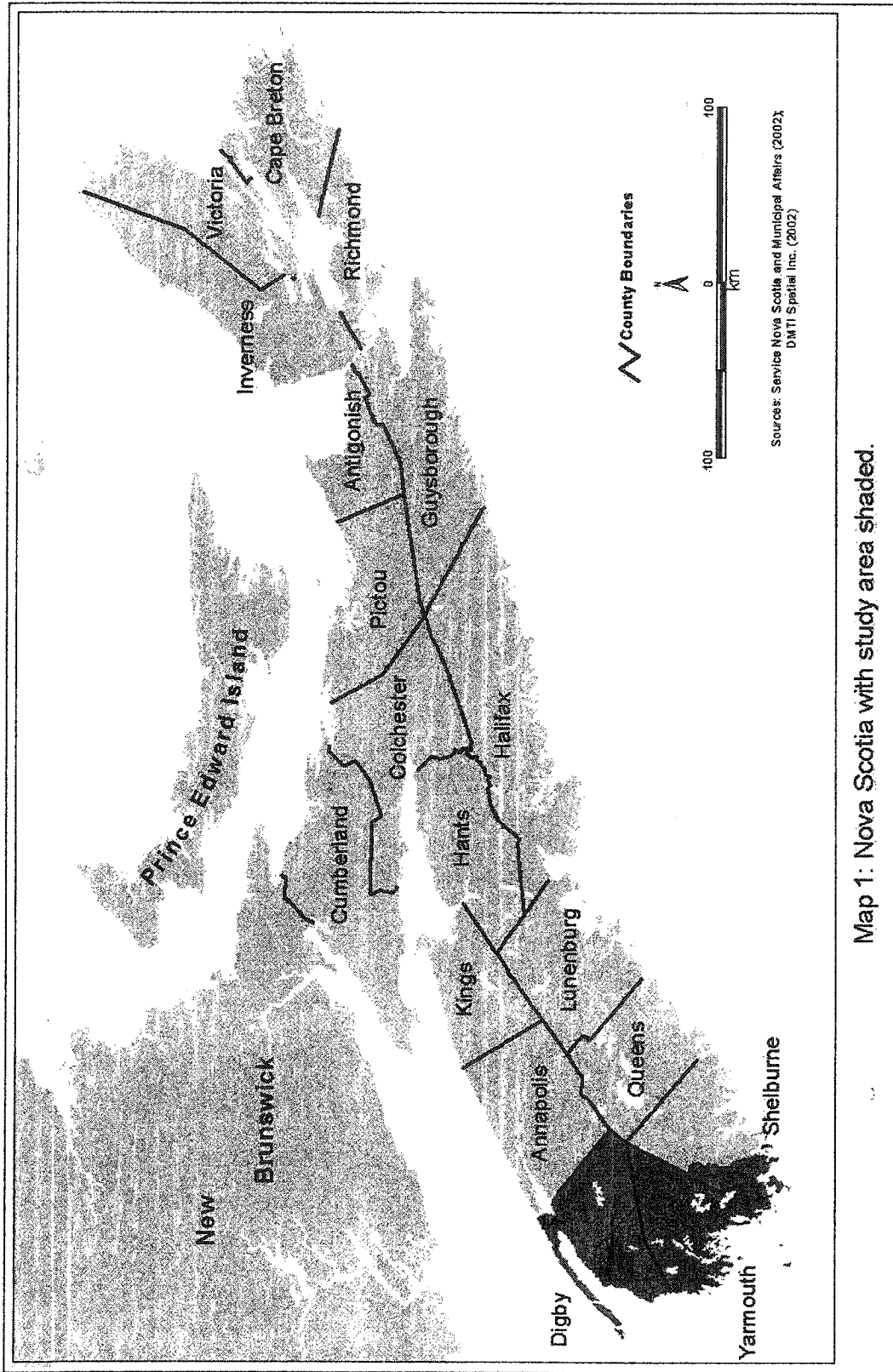
This study depended on information provided by the many participants in the Southwest Nova Scotia lobster industry, fishermen and lobster buyers, fishermen's wives and other community members who were kind enough to take the time to talk with me. I wish to express my deep appreciation for this kindness, and my sincere hope that I have accurately represented the people of Southwest Nova Scotia in these pages.

INTRODUCTION

For more than a century the American lobster, *Homarus americanus*, boiled live and served with drawn butter, was a regional *pièce de résistance* in fine seafood restaurants along North America's Eastern Seaboard. Today, the prized crustacean, whose habitat is restricted to the Atlantic coastal waters between Maryland and Newfoundland, is served in upscale eating establishments from Paris to Tokyo. Franchised family seafood restaurants across North America offer lobster dishes, and tanks full of live lobsters have appeared in urban supermarkets. Like French wine, German automobiles, and American computer software, the lobster has become a global luxury commodity, a commodity whose high value is associated with its place of origin by the international class of privileged consumers who can afford to enjoy it. But unlike French wine, German automobiles, or American software, *Homarus americanus* is brought to market by thousands of small, independent, household-based, owner-operated enterprises, whose production methods have not changed fundamentally for a century. The lobster itself is a rarity among contemporary global commodities, an uncultivated natural product that is captured in the wild and delivered live and unaltered to the marketplace. My study examines the effects of an expanding global marketplace, coupled with technological advance, evolving state policy, and a changing natural resource base, on a traditional small-boat fishing industry.

Although many people associate the lobster fishery with the New England region of the United States and the state of Maine in particular, in fact more than half of the world's annual harvest of American lobster is landed in Canada's Atlantic Provinces. Southwest Nova Scotia, the site of my study, is the most productive lobster fishing area in Canada (see Map 1). Fortune seems to be smiling on the fishermen¹ of Southwest Nova Scotia at the turn of the millennium. While the survival of so many Atlantic Canadian fishing communities is threatened by drastic declines in fish stocks and concomitant severe

¹ Throughout the text I use the term 'fisherman' rather than the gender-neutral 'fisher' with some trepidation. I do so, first, because this is what fishing people in Southwest Nova Scotia (including the fishing women I have talked to) call themselves, and second, because none of the Southwest Nova lobster captains, and only a small handful of their crew, are women.



Sources: Service Nova Scotia and Municipal Affairs (2002);
DMTI Spatial Inc. (2002)

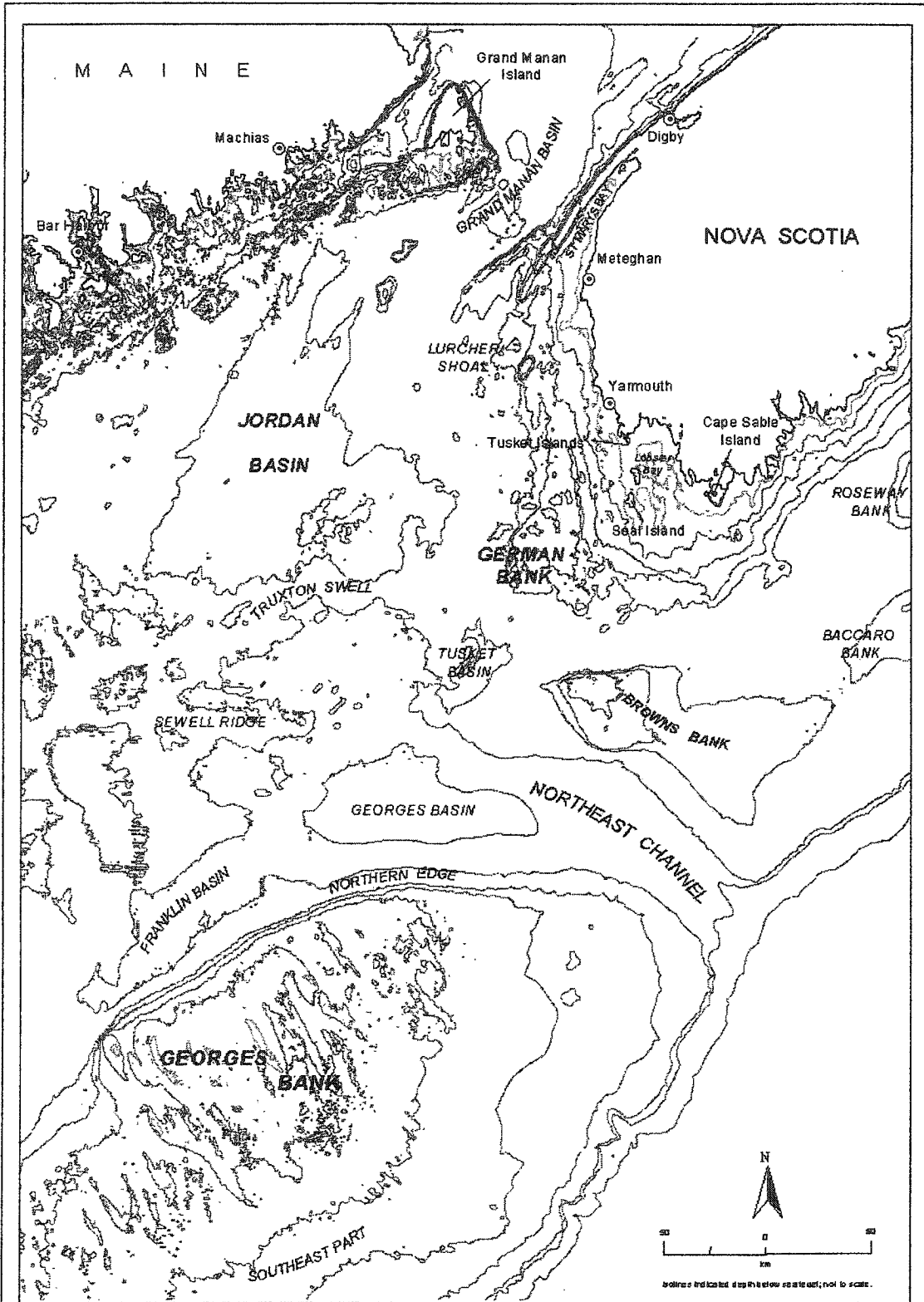
Map 1: Nova Scotia with study area shaded.

government restrictions on the amounts of fish that may be landed, the fishing industry in Southwest Nova Scotia continues to grow and prosper. In the southern half of Southwest Nova Scotia, from Cape Sable Island to Argyle, there is an actual shortage of willing fishermen, and captains from this area must sometimes turn to other parts of Atlantic Canada to fill out their crew rosters. As one captain put it, "If you want to go fishing, you'll do okay around here!"

Several factors contribute to the remarkable success of the fishing industry in Southwest Nova Scotia. First, there is the diversity of commercial species available to be caught. The fishing fleet lands a wide variety of groundfish, including cod, halibut, pollock, and flatfish. The robust herring fishery accounts for most of the pelagic catch, but some fishermen also chase huge swordfish and tuna with hooks and harpoons. Offshore and inshore fleets drag the ocean floor for scallops, the region's most valuable mollusks. Among the crustaceans, several species of crabs are harvested but lobster is the most important catch. The fortunes of the fishing industry in Southwest Nova Scotia have never been tied to the relative abundance of any single species. The harbours here are usually ice-free in the winter, permitting year-round fishing.

The fishing grounds of Southwest Nova Scotia are especially bountiful. A network of reefs, shoals, banks, and islands stretching out over fifty miles from the shore provides an extended inshore habitat for many commercial species (see Map 2). Offshore to the south, Brown's and George's Banks continue to be productive in a time when most of Atlantic Canada's offshore fishing banks have been dangerously depleted by the 'dragger' or otter trawl fishery.

By Atlantic Canadian standards, the Southwest Nova Scotia fishing industry is uniquely decentralized in both the capture and processing sectors. It consists of hundreds of enterprises rather than a few large, vertically integrated ones. Capital investment is high, but it is spread out among a large number of owner-operator entrepreneurs rather than a few major corporate firms. Smaller owner-operators respond more flexibly to changes in business conditions because they are not beholden to stockholders, and because they will



Map 2: Fishing Areas Adjacent to Southwest Nova Scotia

Data Source: EBRIL Ltd. (2002); IROG;
 Marine Office of GNB
 Produced by IROG (GAL) (y lca)
 September 2002

make great sacrifices to protect their personal investment in the business. In other parts of Atlantic Canada, the withdrawal of a single, large, vertically integrated fish company can put local economies in crisis, but no such company dominates the industry in Southwest Nova Scotia.

A diversity of commercial species, rich fishing grounds, and the economic resilience of an industry founded on numerous small capital enterprises contribute to the success of the fishing industry in Southwest Nova Scotia, but the linchpin of this industry today is the lobster fishery. In 1998, lobster accounted for seventy-two percent of the landed value of all species in Southwest Nova Scotia (Canada, DFO Commercial Data Division 1999b). The average lobster boat landed \$165,000 worth of lobster during the six-month season that year. And the lobster industry employs more than its 967 licensed lobster captains and their crews. Thousands more workers are involved in buying, storing, and shipping lobsters, in constructing vessels, traps and other gear, and providing bait, fuel, and other sundries and services.

The Department of Fisheries and Oceans (DFO), a federal cabinet ministry, regulates the Canadian commercial fisheries on a regional basis. The Maritimes Region consists of the Gulf of St. Lawrence Fisheries and the Scotia-Fundy Fisheries. The Southwest Nova Scotia fisheries are part of the latter. The DFO concerns itself with every aspect of the management of Canada's ocean resources, which extend from the low tide mark on the shore to the 200-mile offshore jurisdictional limit claimed by the Canadian government in 1977. Besides managing the fisheries, the DFO operates the Canadian Coast Guard and is responsible for preserving marine and coastal environmental quality. Three major branches of the Department, Science, Enforcement, and Resource Management, are directly concerned with regulating the fisheries. The many fisheries biologists within the Science Branch conduct research on all of the Canadian commercial species and their habitats, prepare periodic stock assessment reports, and advise fisheries policy makers and fishing industry participants. The Enforcement Branch supervises the fisheries officers in patrol vessels and on the wharves who enforce fisheries regulations and apprehend violators. A Director of Resource Management represents the Resource

Management Branch within each fishing region, working with a panel of Senior Policy Advisors to develop an integrated fisheries management plan for the region. Regional resource managers are authorized to make routine changes in regional fisheries regulations, but the Fisheries Minister and his² staff in Ottawa make the major policy decisions. A fourth, smaller branch of the DFO oversees Small Craft Harbours. The DFO once owned, maintained, and supervised thousands of small craft harbours across the country, but it is currently well along in the process of transferring the responsibilities of management, maintenance, and, in many cases, ownership of most of its small 'government wharves' to locally-elected Harbour Authorities.

The Department of Fisheries and Oceans also has the responsibility of integrating Canada's aboriginal people into the fishing industry. Canadian Supreme Court decisions in 1990 and 1999³ respectively found that aboriginal Canadians had certain rights of priority over non-aboriginals in the fisheries, and that the Mi'kmaq and Maliseet First Nations in the Atlantic Provinces had a specific right to participate in the commercial fisheries in that region. In 1992, the Canadian government's the Aboriginal Fisheries Strategy (AFS) directed (and funded) the DFO to assist First Nations people in taking their place in the commercial fisheries. In Southwest Nova Scotia, the DFO has used some of these funds to purchase lobster licenses, vessels, and gear for First Nations communities.

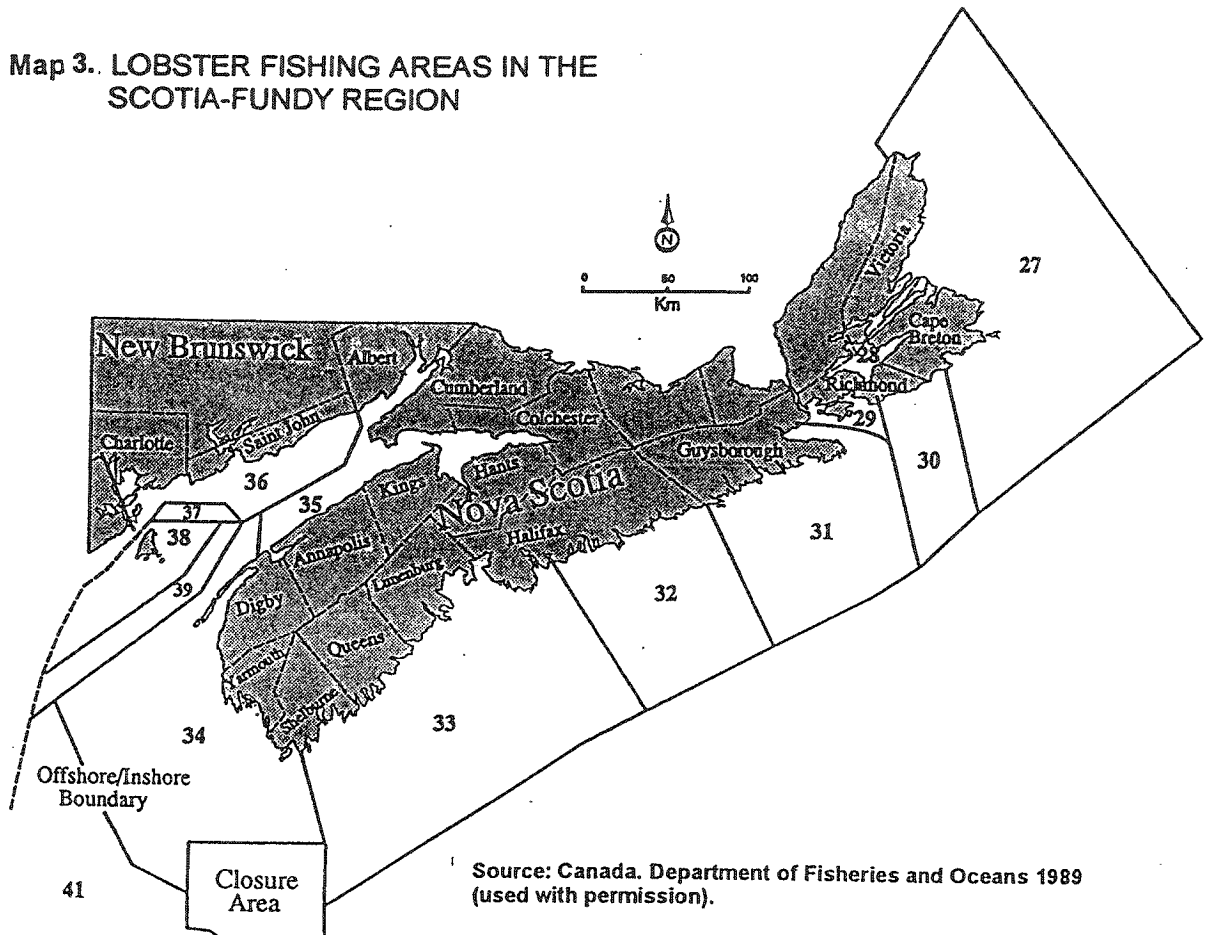
The Department of Fisheries and Oceans has marked off thirteen Lobster Fishing Areas (LFAs) contiguous to the Nova Scotia coast (see Map 3). Each area has its own set of fishing regulations and its own legal fishing season. The DFO has issued a fixed number of lobster fishing licenses in each area, subject to annual renewal. Federal law prohibits lobster fishermen from owning more than one license, or from operating in more than one LFA. Over the last twenty years, the DFO has sought to improve its lines of communication with commercial fishermen by establishing fishermen's Advisory Committees for each of the fishing sectors in every fishing area. Open to the public,

² All of Canada's Fisheries Ministers have been men.

³ *Regina v. Sparrow* and *Regina vs. Marshall* (Canada, Supreme Court of Canada: 1990 and 1999a).

Advisory Committee meetings are co-chaired by a fisherman representative and a locally based DFO manager, and are usually attended by representatives of DFO management,

Map 3. LOBSTER FISHING AREAS IN THE SCOTIA-FUNDY REGION



science and enforcement, and representatives of fishermen's associations and other interested parties. As will be discussed in a later chapter, fishermen's representatives have been able to use these meetings to exercise some influence on DFO management policy.

The DFO has designated the inshore fishing grounds of Southwest Nova Scotia, reaching from Cape Sable Island in the south to Digby Neck in the north, as Lobster Fishing Area 34. LFA 34, the focus of this study, is the most productive of the thirteen LFAs along the Nova Scotia coast. The LFA 34 Advisory Committee consists of fourteen elected

representatives of lobster fishermen operating out of the eleven designated 'port clusters' in Southwest Nova Scotia⁴. The legal fishing season for lobster in LFA 34 begins on the last Monday of November, and ends on May 31. At first glance, the individual lobster fishing enterprise in LFA 34 has not changed a great deal in the last fifty years. Typically, the lobster captain, accompanied by a crew of one to three fishermen, sets out at dawn on the first day of the season ('dumping day'), in a Cape Island-style fishing vessel under forty-five feet in length. Some of these crewmembers are likely to be relatives - sons, brothers, cousins or in-laws of the captain - and most will be paid in shares⁵ of the catch rather than by wages. On dumping day the captain hurries to place his baited lobster traps in spots where he thinks the lobsters will be. Buoys have been attached to the traps with rope (the 'warp line') to mark the locations. Each captain paints his buoys with a distinctive colour scheme for ease of identification.

The next day the captain and crew return to haul up each lobster trap with the help of a hydraulic winch. There could be a half-dozen lobsters of various sizes in a trap, and perhaps a crab or two, some whelks, and the occasional fish. The fishermen remove the larger lobsters and check them for length with a steel measuring gauge. In LFA 34, a lobster must have a carapace length⁶ of at least three and one quarter inches (82.5 mm.) to be legally landed. Using a scissors-like tool, a crewmember slips stout rubber bands over the powerful claws of these 'keepers' to immobilize them. The undersized lobsters (the 'shorts' or 'tinkers') are carefully returned to the sea to avoid injuring them. A crewman re-baits the trap, usually by hanging a small net bag of chopped fresh frozen herring or mackerel inside, near the entrance. Alternately he might impale a live crab, a sculpin, a 'fish frame'⁷, or some other tempting morsel on a bait spike that is attached to the floor of the trap. Now the trap can be dropped back into the ocean. The banded 'keeper' lobsters are placed temporarily in a large tub of seawater. As the tub fills, the lobsters are

⁴ Three large port clusters are each represented by two members.

⁵ 'Fishing for shares' is a tradition in all the Atlantic Canadian fisheries. Crew members are regarded as 'co-adventurers' with the captain rather than employees, and each receives a set percentage of the catch value.

⁶ The carapace is the rigid shell on a lobster's back or thorax. It is measured from the lobster's eye socket to the beginning of the flexible tail or abdomen.

⁷ A sculpin is a small, ugly, inedible fish that (ironically) feeds on small lobsters. A fish frame is what is left of a fish - head, tail and bones - after it has been filleted. Ocean perch (redfish) are preferred.



Plate 1. Banding a lobster. Note tub for holding legal-sized lobsters in the background. The lobster in the bait tub (foreground) is undersized.



Plate 2. Measuring a lobster. Bait tubs in foreground contain (left to right): discarded used bait, frozen herring, and live crabs.

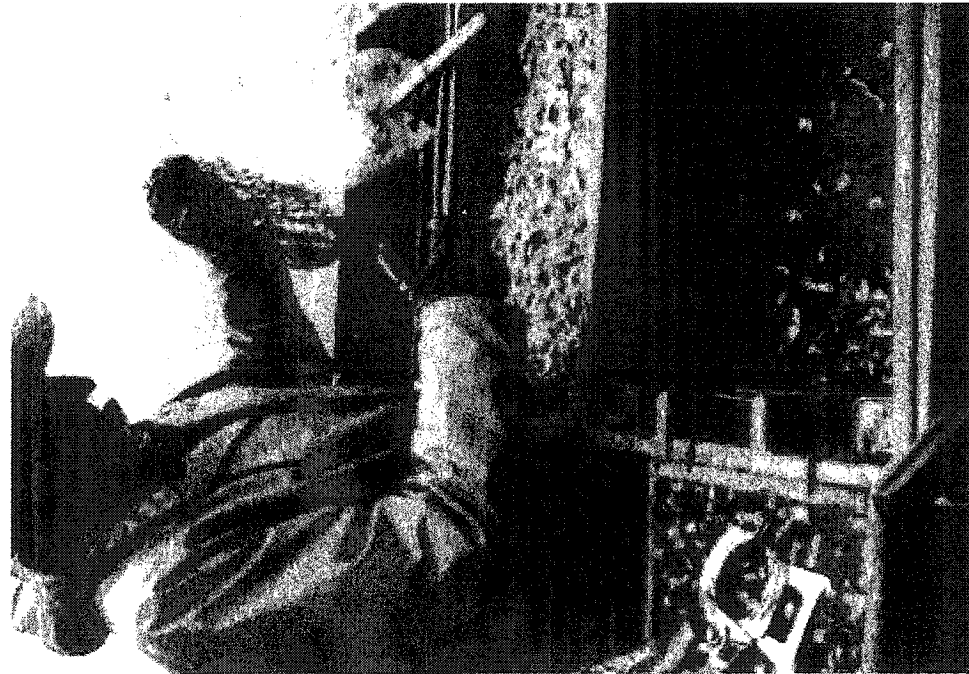


Plate 3. Filling a bait bag. Note the banding and measuring tools laying on the box of rubber bands (lower left).

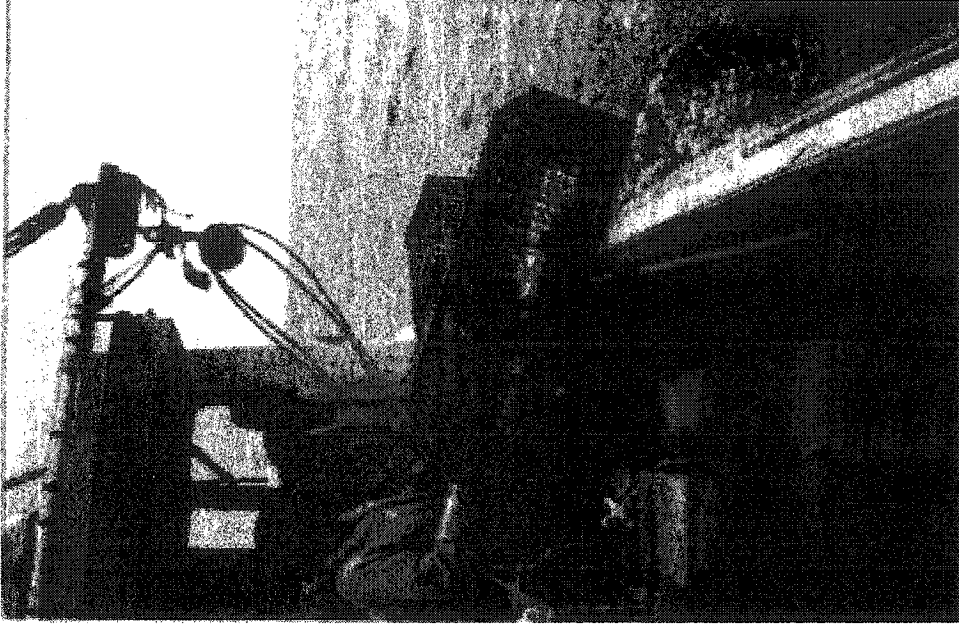


Plate 4. Crewman (l.) and captain hauling traps.

transferred to hundred-pound capacity wooden or plastic crates. Fortunately, lobsters can survive for days out of water as long as their gills are kept damp and temperatures do not fall below freezing.

Once all of the traps have been hauled up, emptied, and returned to the water, the skipper steers his vessel back to the harbour. There, he may have his crates of lobsters weighed at a buying station right on the wharf and sell them immediately. Alternately, if he has the facilities, he might store them for a week or two underwater in anticipation of a price rise. This daily routine continues, weather permitting, seven days of the week for the first few weeks of the season, when catches are highest. Fortunately, market demand is high during the December holiday season. By the beginning of January, daily catches fall off. The intense fishing in December depletes the numbers of legal-sized lobsters, and falling water temperatures send most of the remaining ones into hibernation or on a migration to warmer waters offshore. Winter weather conditions at sea can be hazardous, and many captains will now only check their traps once a week or so, if there is a fine day. A minority of the captains will haul out their traps to avoid damage or loss from storms, and wait until warmer spring weather to resume fishing.

Fishing usually resumes in earnest by mid-March. Lobster buyers' inventories are down, the weather has improved, the water is warmer, and migrating lobsters begin to return inshore. Catches improve until the end of the fishing season in May. Lobsters are most plentiful inshore during the closed summer season, but this is the time when they are molting and mating and they are best left alone. The fragile, soft-shelled summer lobsters are not as tasty, and they are difficult to handle and ship. During the summer, some lobster fishermen find work in other fisheries or in land-based occupations, while others take time off. By September, captains and crews are at work again, painting and refitting vessels, repairing traps and other gear, and attaching the new DFO-issued plastic tags that identify their traps as the gear of a particular fisherman licensed for the new season.

While the modern lobster fishing enterprise in Southwest Nova Scotia bears a superficial resemblance to its antecedent of fifty years earlier, it has changed in many ways. It has

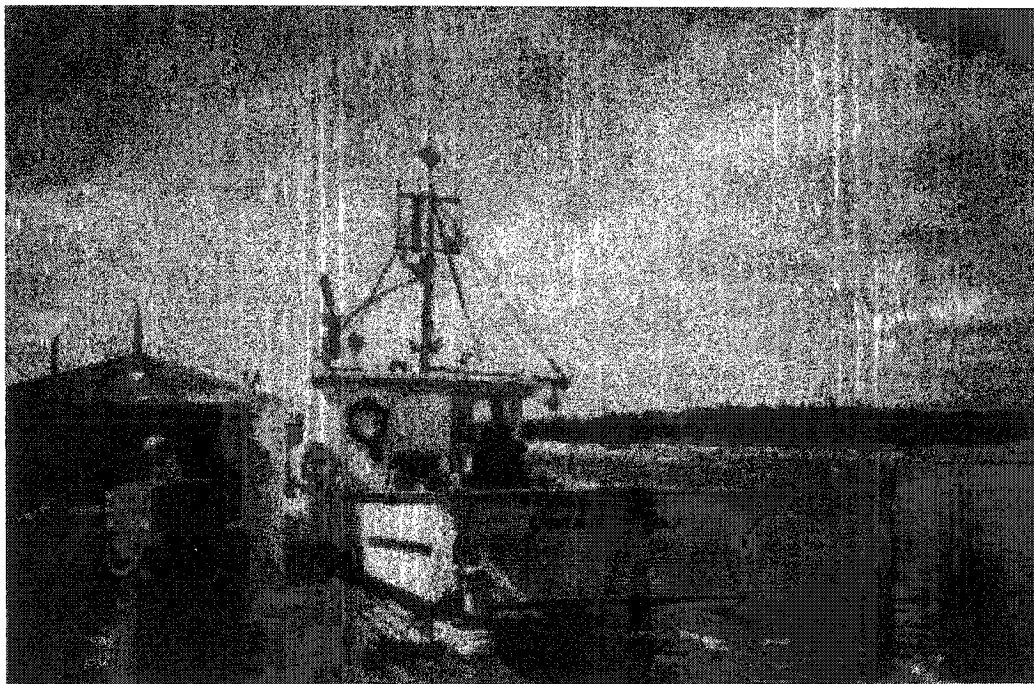


Plate 5. Unloading lobsters at a floating buying station.



Plate 6. Weighing lobsters inside the buying station.

increased in technological sophistication, capital investment, and fishing intensity, and it is subject to more stringent government regulation and enforcement. Where captains once navigated with charts, a compass and a watch, they now use sophisticated electronics. Many captains employ some combination of LORAN-C (a radio-based LONG RANGE Navigational system), GPS (a satellite-based Global Positioning System), a course plotter that incorporates CDROM-based navigational charts, and depth sounders with a colour-coded video display. A glance at the computer screen shows them exactly where they are, where their traps are located, and the depth, contours and density of the ocean floor below them. The cellular telephone is replacing the marine radio as a more convenient way to contact fish buyers, equipment suppliers and family and friends ashore.

There are a few small, wooden, gasoline-powered 'Cape Island'¹ boats still operating in the less productive parts of LFA 34, and a few fishermen use outboard-powered skiffs to haul lobster traps in the near-shore grounds off Cape Sable Island, but these are the exception. Most lobster vessels in LFA 34 still follow the Cape Island design, but they are made of fiberglass, diesel-powered, and built to, or near, the maximum legal length of forty-four feet, eleven inches (about 13.7 metres). Larger, more powerful, and more seaworthy than their predecessors, they are also much more expensive: a new one is likely to cost over a half million dollars. Fishing gear has also improved. Large, durable, and efficient plastic-coated steel mesh traps have displaced the old homemade wooden lobster pot, but at a price: a factory-built steel trap costs about \$100, and most fishermen own at least four hundred of them, a \$40,000 investment. Rot-resistant synthetic ropes have replaced the old natural fiber lines, and styrofoam buoys have supplanted wooden ones. The rubber band has superseded the old wooden lobster plug² as a better and more humane way of disabling a lobster's claws.

Fifty years ago, lobstering was called the poor man's fishery. This was partly because the return for labour effort was relatively low, but also because the necessary capital investment was minimal. A lobster fisherman, with help from his crew and family

¹ For views of vessels of the 'Cape Island' design, see plates 5 and 8.

² Lobster plugs were small, pointed wooden pegs inserted through the lobster's shell behind the moving part of the claw to prevent it from opening.

members, could build and maintain his own pots, buoys, and even his fishing vessel (an old automobile engine would serve it for power) in his spare time between fishing seasons. A federal license to fish lobster cost only fifty cents annually. Today, an LFA 34 lobster 'rig' - vessel, gear, and fishing license - can cost over a million dollars. Lobstering has evolved into a rich man's fishery primarily because the return for effort has grown astronomically. Since the early 1980s, and for reasons that are not entirely understood, the lobster stocks in LFA 34 have increased dramatically. Lobster landings by weight more than tripled between 1981 and 1998, and because the price of lobster also rose, the total landed value of LFA 34 lobster increased by a factor of more than seven (Canada, DFO, Commercial Data Division 1982a and b; 1999a and b). There is so much money to be made from lobsters that many fishermen are willing to go deeply in debt to purchase the finest vessels, electronics, and gear to catch them. Access to the fishery is transferable, but limited to 967 licensees, so an aspiring lobster captain must also pay dearly to purchase a license from a retiring fisherman. But fishermen are willing to take the financial risk of entering and investing in the lobster fishery because at the present time in Southwest Nova Scotia there is no other way for an owner-operator to make a decent living in the fisheries. The capital costs of entering the region's other profitable fishery sectors - groundfish dragging, offshore scallop dragging and herring seining - are prohibitively high for an owner-operator. Limited entry licensing and catch quotas already severely restrict participation in these fishing sectors, and the fleets of a small number of fish processing companies dominate them.

The prospect of unprecedented financial returns, the need to service unprecedented levels of debt, and the lack of fishing alternatives have driven many established lobster captains to increase their fishing efforts substantially. New entrants with heavy debt loads will "go at it harder" than did the retiring fishermen from whom they have purchased their licenses. Since federal regulations limit the number of traps a license-holder may set to 375 at the beginning of the season and 400 after April 1, fishermen have found other ways to increase fishing effort. Chiefly, they use more efficient vessels and gear, and larger crews, adopt more efficient fishing techniques, travel further, and spend more time on the water. They use larger wire traps, typically about four feet long, two feet wide and

one foot high, to catch more lobsters per trap. Like all lobster traps, these large ones have a 'kitchen' compartment where the bait is hung and where lobsters enter, but unlike smaller traps, they have two secondary chambers or 'parlours' instead of one. A lobster

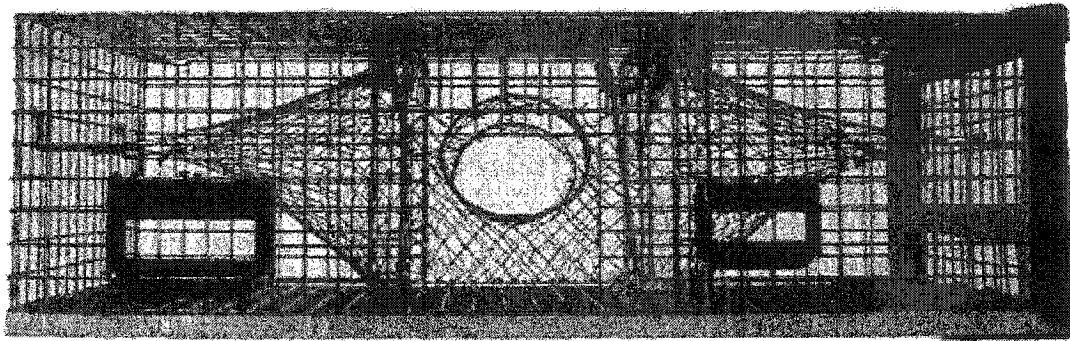


Figure 1. A modern four-foot long two-parlour wire lobster trap. Lobsters enter through the rings in the centre and pass through the conical parlour heads on either side. Note the two rectangular escape hatches for undersized lobsters.

enters a trap through the 'kitchen head', a funnel-shaped net with a metal ring at the end. When trying to escape the trap, the lobster is likely to enter a second funneled net, the 'parlour head', and become further entrapped in a parlour chamber. Lobsters are notoriously cannibalistic, and if two or more lobsters are trapped in the same parlour, they are likely to injure each other by fighting. In two-parlour traps, these confrontations are reduced. Traditionally, fishermen in Southwest Nova Scotia have set one or two traps on a single buoy. Now, many set some or all of their traps in 'trawls'. A trawl is a string of up to twenty traps whose location is marked with a large float or 'balloon' at each end. Trawls significantly reduce the number of hauls that must be made each day, and the spacious decks of modern lobster boats permit the rapid unloading and re-baiting of many traps at once. During productive fishing periods, some trawl fishermen can haul all of their traps twice in a single day. The trawl system also permits the rapid relocation of traps when fishermen are trying to pursue and intercept migrating lobsters. Because their vessels are more powerful and seaworthy, captains can now pursue migrating lobsters in mid-winter to the fifty-mile offshore limit of LFA 34. These more aggressive 'midshore' fishermen will sail whenever weather permits, day or night, throughout the winter. If the

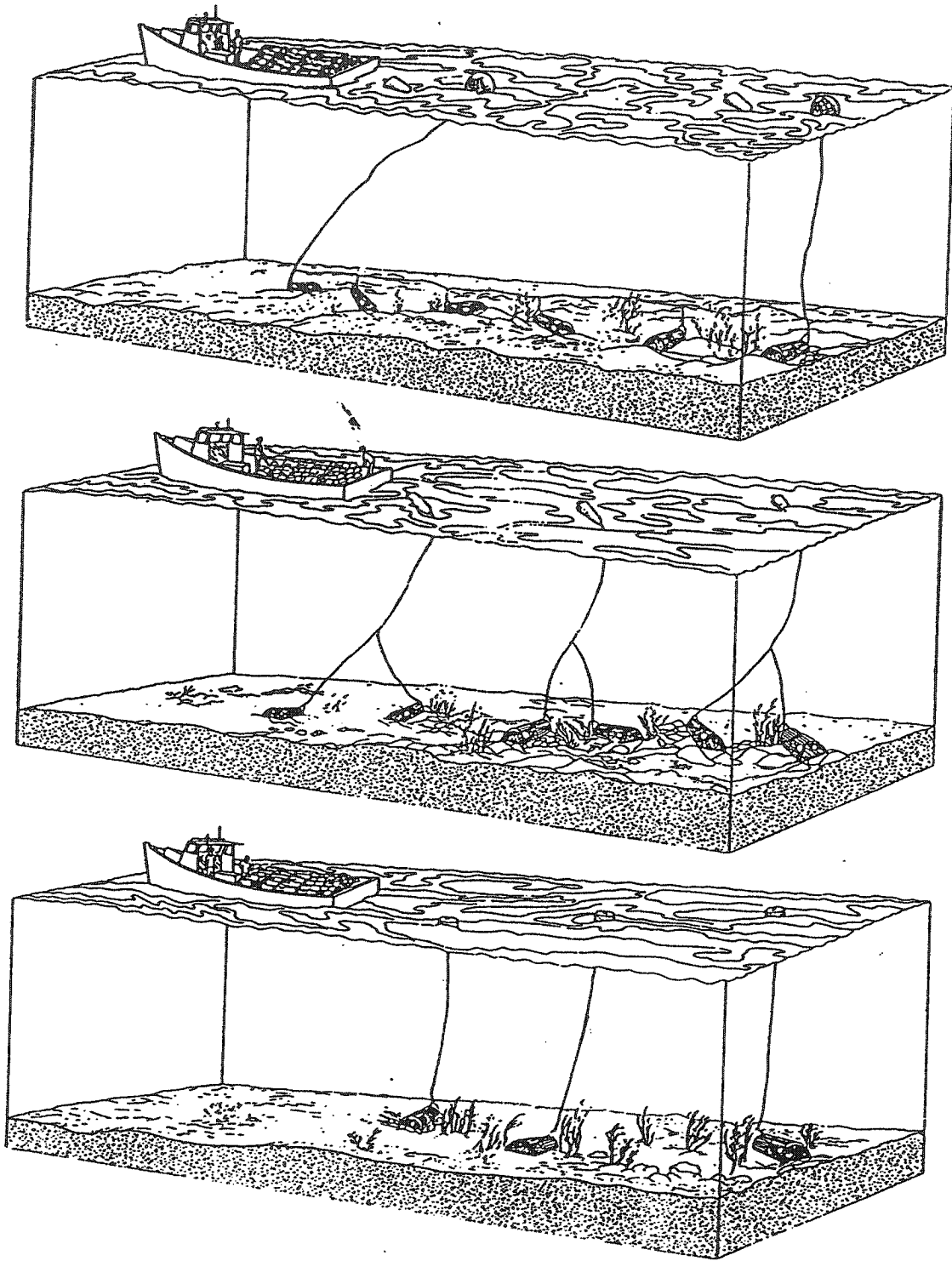


Figure 2. A sketch showing the three basic methods of rigging lobster gear. The upper panel shows a trawl, up to twenty traps hooked sequentially to a main line, which may be anchored at both ends and marked by large 'balloon' buoys. The middle panel shows pairs, two traps hooked together on a single buoy. The lower panel shows singles, one trap attached to one buoy. (Source: G. Sharp, DFO, unpublished diagram. Used with permission.)

weather forecast is favourable, they may leave the wharf at 2:00 AM and 'steam' for five or six hours to the midshore fishing grounds. They will endure frozen spray and icy ocean winds to haul, unload and re-bait 375 traps, and finally return home after dark in the evening. While lobster captains and their crews make far more money these days, the work is still exceptionally demanding, both physically and psychologically, and it is still very dangerous.

The lobster captains of Southwest Nova Scotia are known for their 'rugged individualism' and independent opinions. They have never joined forces to form an area-wide independent professional organization to formulate, project, and defend mutual interests. The DFO requires each LFA 34 lobster license holder to belong to a professional fishermen's association, but there is no trade organization that represents LFA 34 lobster fishermen as a whole. Instead, there are a number of locally based inshore fishermen's associations. The most prominent of these are the Bay of Fundy Inshore Fishermen's Association (BFIFA), the West Nova Fishermen's Association (WNFA), the Yarmouth County Fixed Gear Association (YCFGFA), and the Bear Point-Shag Harbour-Woods Harbour Fishermen's Association (BSWFA). These organizations represent the locally-based interests of all inshore fishermen in specific localities within Southwest Nova Scotia, rather than the specific interests of lobster fishermen. These organizations are sometimes at odds with each other on fisheries management issues, because they represent localities with different fisheries resource bases, different fishing practices, and different historical and cultural heritages. The Maritime Fishermen's Union (MFU) has been successful in organizing inshore fishermen in New Brunswick, but its recruitment drives among lobster fishermen in Southwest Nova Scotia have not been very fruitful. The only group with a legitimate claim to represent all of Southwest Nova Scotia's lobster fishermen is the LFA 34 Advisory Committee discussed earlier, but as a creation of the DFO, the Committee is viewed with suspicion by many lobstermen.

Almost a thousand captains and probably twice as many crewmembers find employment in the Southwest Nova Scotia lobster fishery on the water, but the lobster industry also provides work for a substantial labour force on shore. Some land-based enterprises

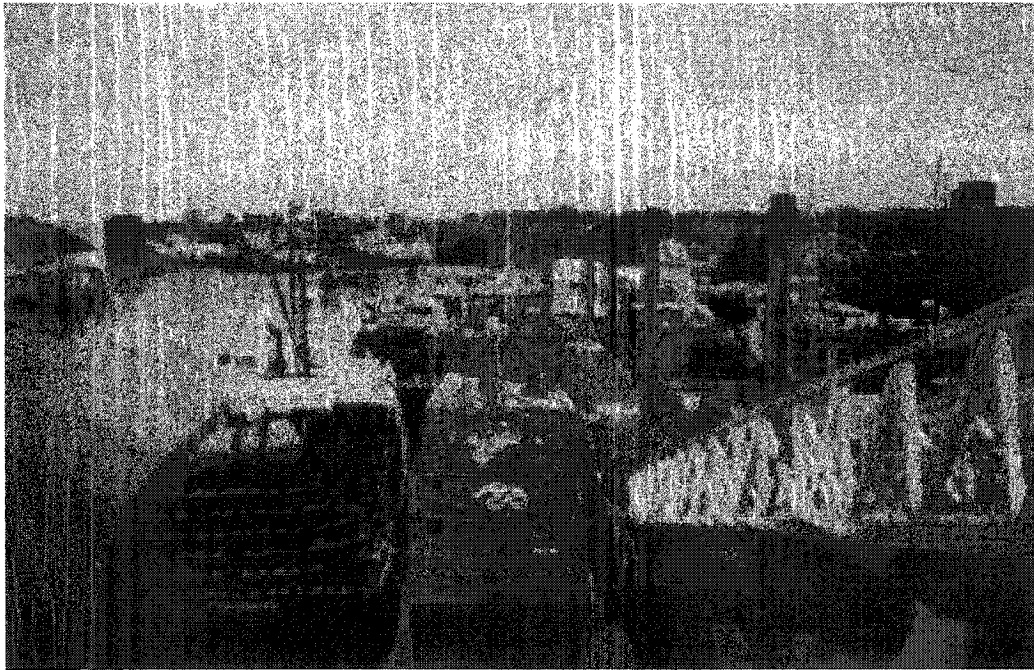


Plate 7. Vessels loaded for “dumping day” at the Meteghan wharf.

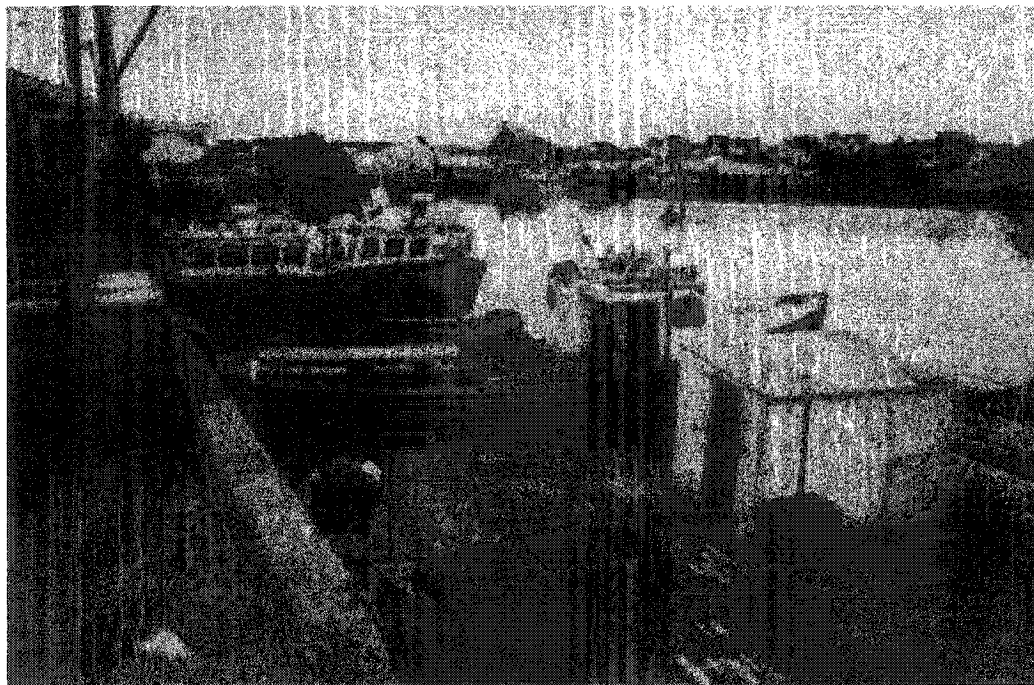


Plate 8. A lobster buying station at Clark's Harbour

supply and service the lobster fishery, while others buy, store, process, market and ship the lobster it lands. There are twenty-one lobster boat builders listed in the region's Yellow Pages, and many more vessel repair shops. At least two dozen local firms supply marine equipment and electronics, and there are ten marine diesel engine dealerships. A half dozen plants manufacture lobster traps and crates. The herring fleet furnishes bait for the traps, and tank trucks travel from wharf to wharf, fueling the lobster boats with diesel oil.

When a lobster fishing captain brings in his lobsters at the end of the day, he still faces the problem of selling his catch. In the past, usually only one or two lobster buyers operated on any given wharf. Lobstermen usually formed enduring business relationships with a single merchant, who not only bought their lobsters but also provided them with fishing gear, bait and fuel, and would extend credit in times of need. Today, many lobster captains are still loyal to a single buyer, but most are not obliged to rely on their buyer for credit or supplies, and lobster buyers themselves are much more competitive. The **Nova Scotia Seafood Directory** (Nova Scotia, Department of Fisheries and Aquaculture 1999) lists sixty-eight firms that buy and sell lobster in Southwest Nova Scotia, but this is just the tip of the iceberg. Many more small-scale buyers, sometimes operating with little more than a buyer's license, a van, and a scale, go from wharf to wharf, offer fishermen slightly more than the going price, and then quickly resell to larger dealers.

Lobsters follow a long and complicated path as they move from the buying station on the wharf to the dinner table. They usually pass through the hands of several dealers, spending time in a variety of storage facilities. The technologies of handling, holding, processing and shipping of lobsters have made great strides since the mid-1970s, and some of these technologies will be discussed below. The structure of the lobster marketing system will be addressed in a later chapter.

When fishermen remove lobsters from their traps, they immediately band their claws to prevent the animals from attacking each other or their handlers, and then pack them in crates. Traditional crates are constructed of wood, but in recent years plastic crates have

become popular. Plastic crates are lighter, more durable, cause less damage to the lobster, and are of exactly equal weight. Wooden crates absorb water and gain weight, so accurate net weights can only be obtained by removing the lobster from them. The plastic crates are very expensive, however, so most fishermen and lobster buyers lease them from LogTech, a large shipping firm. One medium-sized buyer told me he was spending about \$5000 a month for this service. Healthy lobsters will survive for a few days out of water in crates if they are kept cool and moist. This is the way they are normally shipped by truck.

When fishermen arrive at the wharf, their crates of lobsters are likely to be placed in a car, a large, slatted wooden container submerged in the ocean nearby. The car might be owned by a buyer or by the fisherman himself. If the fisherman is selling his lobsters right away, the buyer will weigh them before they are 'carred'. Crated lobsters may be stored safely for a few weeks in cars, although they can be harmed or killed by oil pollution from nearby fishing vessels, by excessive fresh water coming from heavy rain or snow, or by mud or silt stirred up by storms. If the lobsters are to be held for more than a few weeks, they must be transferred to long-term storage facilities.

Traditionally, lobster 'pounds' have been used for long-term storage. 'Tidal pounds' are artificial saltwater ponds constructed along the shore, but concrete pounds fed with constantly circulated ocean water are also built on land. They may be built in the open, or housed in a building. Banded lobsters stored in pounds may be released from their crates, or left crated for shorter periods of time. It is essential to keep the pound water clean and well aerated, and to monitor water temperature. If the water gets too warm, lobsters will begin to molt. If it gets too cold, they will freeze. In the fall, lobsters are normally softer-shelled following the summer molt and they have not grown enough to fill up their new shells with meat. If the pound water is warm enough to keep them active, the pound-keeper can feed them with ground up fish. Fall pound feeding can harden the shells of summer lobsters and fill them with meat. Fall feeding is a common practice in New England pounds because fishermen there are permitted to harvest lobsters in late summer and early fall. In Southwest Nova Scotia, pound feeding is usually not practical because

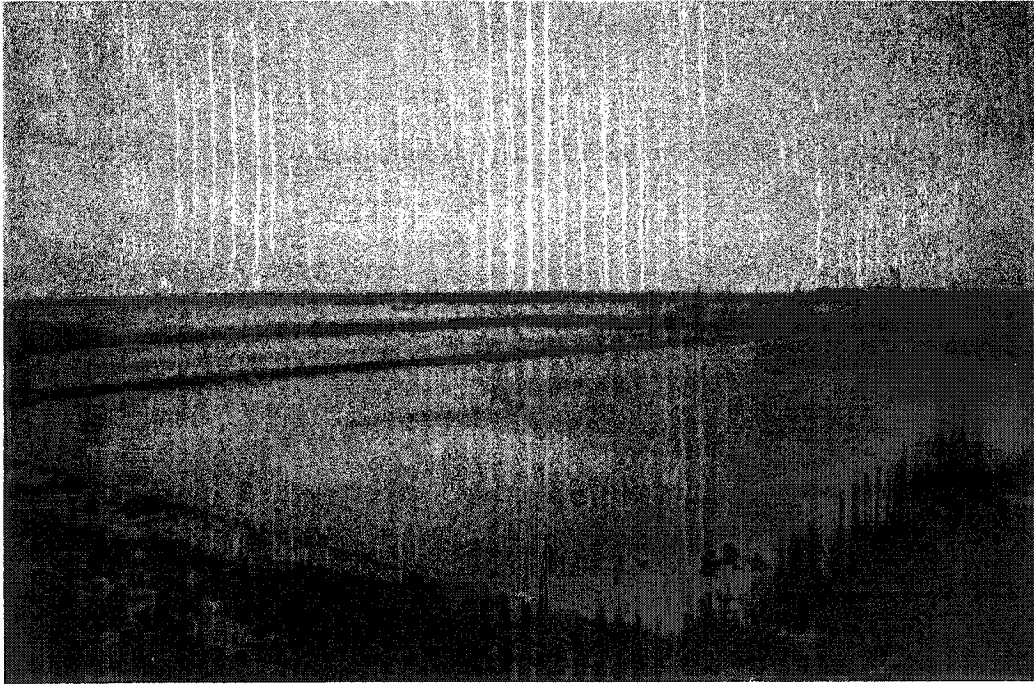


Plate 9. A tidal pond in East Pubnico.



Plate 10. An open, on-land pond on Cape Sable Island.

soon after the lobster fishing season begins, the ocean water that fills the pounds gets colder and the lobsters stop feeding. In fact, lobsters cannot be kept through the winter in outdoor pounds in this region because the inshore water gets so cold that the stored crustaceans could freeze. Some buyers maintain winter pounds on Nova Scotia's South Shore or on Grand Manan Island in New Brunswick, where winter water temperatures are higher. Lobsters cannot be stored through the summer in outdoor pounds because they will molt. In general, traditional pounds are much more practical in New England than in the Atlantic Provinces.

Because of the ineffectiveness of traditional pounds and the need to bridge the periods of lobster scarcity that occur in mid-winter and during the closed summer season, Nova Scotia buyers have developed more sophisticated long-term lobster storage systems. Some fishermen have even built their own small temperature-controlled storage facilities. Clearwater Lobsters, Canada's leading lobster distributor, has developed the most advanced dry-land storage system to date, and, so far, it has not been successfully copied by competitors. Lobsters to be stored for extended periods of time must be very healthy, so they are carefully inspected for external injury, disease and shell hardness. In addition, most long-term lobster holders test blood protein levels in lobsters to predict their viability in storage. At Clearwater, plant workers sort lobsters by size and quality and place them in individual adjustable partitions within stacking perforated plastic trays that hold about a dozen lobsters. The filled trays are stacked to a height of about thirty feet in a temperature-controlled warehouse. Clean seawater at slightly above freezing temperature trickles through the stacks of trays, passing from top to bottom. Lobsters held at such a low temperature go into a state of hibernation. Because their metabolism is drastically lowered, they require no food and experience minimal meat shrinkage. They can be kept in this way for six months or so. The seawater need not be aerated, since the trickling process entrains sufficient oxygen. A few days before lobsters are to be shipped, they are removed from the trays and placed in a small pound inside the warehouse. After a day or so they 'come back to life', and clean themselves of a sludge residue that builds up during the long-term storage. Clearwater can store up to 2,500,000 lbs. of lobster in this manner in its two dry-land facilities.



Plate 11. Lobster cars at the Clark's Harbour wharf.

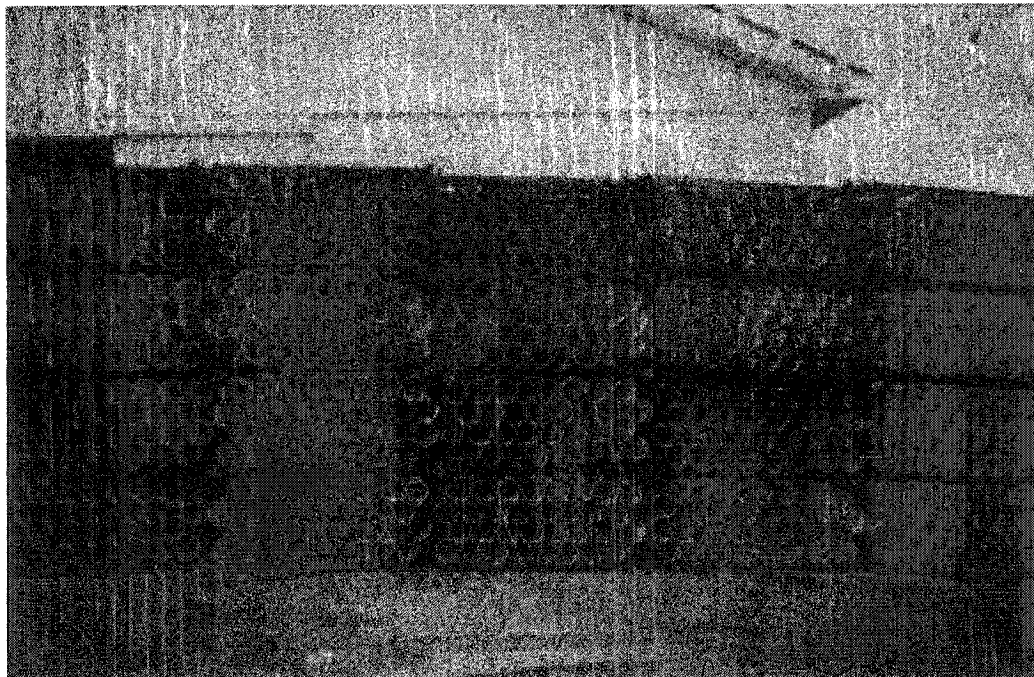


Plate 12. Tubes and cages used for long-term storage of lobsters in a tank house.

No other lobster buyer has successfully reproduced Clearwater's unique storage system, but many, including some fishermen, have adopted other long-term storage systems which incorporate the principle of isolating individual lobsters to save them from injury. Lobsters are inserted in 'tubes', usually short sections of large diameter plastic pipe, and the tubes are packed tightly together in 'cages', which are essentially wire lobster traps without netting or entryways. The loaded cages are then immersed in aerated indoor pounds called 'tank houses', which must be temperature-controlled for long-term storage. This tube and tank house storage system works quite well, but it is less cost-efficient than the Clearwater system because it requires aeration and circulation of large quantities of temperature-controlled seawater. None of the existing tank house facilities approach the capacity of the Clearwater warehouses.

Shippers normally send lobsters going to the eastern parts of United States and Canada by truck in crates. Lobsters bound to more distant destinations are air-shipped to ensure viability. Air-shipped lobsters are packed in compartmentalized cardboard or Styrofoam cartons cooled with gel packs. Lobsters are almost never flown from the regional Yarmouth Airport, located in the heart of LFA 34, because freight costs are too high³. As might be expected, many air-shipped lobsters are flown out of Halifax International Airport, but surprising numbers are trucked to airports in the United States. Clearwater, for instance, trucks lobsters down to its own U.S. air distribution centre in Lexington, Kentucky. Another major shipper explained,

Most of our air shipping is done out of Boston. We pack them here and truck them to Boston and fly them there, simply because of airspace availability in Halifax. We have a freight porter at Logan [Airport]. To say we ship it out of Logan wouldn't be fair. Our freight porter ships some stuff out of Logan, but the freight porters all run trucks to JFK and Newark [Airports]. We deliver them to Logan, but then they go wherever. They're out of the water for 48 hours before the customer gets them, but that's okay. They're pretty durable creatures, really. As long as there's not extreme cold or heat, they'll live out of water for a week.

Table 1 shows the value and quantity by weight of lobsters exported internationally from Nova Scotia in 2000, and the major destinations of the product. About seventy-five

³ Freight costs from the Yarmouth airport are high because there are no regularly-scheduled international flights.

percent of these exports were to the United States. According to the Nova Scotia Department of Agriculture and Fisheries (2001), over ninety-six percent of Nova Scotia's international lobster sales in 2000 were live exports. However, a significant fraction⁴ of the huge December landings in LFA 34 is shipped to lobster processors in New Brunswick and Prince Edward Island, who convert these lobsters to frozen and canned

**Table 1. Nova Scotia Lobster Exports in 2000:
Top Twelve Destinations**

Country	Value (CDN\$)	Quantity (kg.)
Total Exports	338,577,342	20,125,576
United States	254,304,983	14,838,485
Japan	17,885,325	1,012,312
Belgium	17,518,078	1,291,862
United Kingdom	13,228,945	804,288
Germany	5,468,336	306,266
Hong Kong	5,420,397	307,292
Netherlands	4,608,043	270,411
France	3,866,826	275,988
South Korea	3,273,139	206,018
Italy	3,231,035	235,026
Sweden	2,483,251	140,508
Denmark	1,019,963	74,225

Source: Nova Scotia, Department of Agriculture and Fisheries (2001)

products for export. The lobster processing sector is an important part of the Canadian lobster industry, and will be discussed in more detail in a later chapter. Table 2, based on federal government figures, shows that only about a third of the total Canadian lobster exports by value in 2000 was of live lobsters. These figures are potentially misleading, since some of the processed lobster exported from Canada was originally imported into Canada as live lobster from the United States⁵.

⁴ Unfortunately the Nova Scotia Department of Agriculture and Fisheries does not keep records of lobsters exported to other provinces for processing.

⁵ Note also the discrepancy between provincial (Table 1.) and federal (Table 2) figures. The provincial export total value, reported as being over ninety-six percent live product, exceeds the total Canadian value of live lobster exports reported by the federal government by over \$30,000,000.

Table 2. Canadian Lobster Exports by Product in 2000

Product	Value (CDN \$)
Live Lobster	308,350,000
Frozen Lobster	418,506,000
Lobster Meat	161,960,000
Prepared/Preserved	6,700,000

Source: Canada, Agriculture and Agri-foods Canada (2001: 6)

The fishing household

The nature of the fisherman's occupation can put special demands on other members of the fishing household (Binkley 2003; Sinclair and Felt 1992). Though lobster fishermen, unlike deep-sea fishermen, usually return home at the end of the fishing day, they are likely to arrive home exhausted after twelve to sixteen hours or more at sea, ready for supper and bed. During the fishing season, their wives are left to manage the household single-handedly, shopping, cooking, cleaning and driving the children to hockey games, but they must also take on traditional 'male' responsibilities such as vehicle maintenance and home repairs. Today, a few lobster fishermen's wives still perform the traditionally gendered fishing tasks of the past: knitting and filling bait bags for instance, painting the buoys, or doing all the bookkeeping. Most wives in Southwest Nova Scotia do not. Lobstering in this region has evolved from a low-income household enterprise to a highly capitalized small business with heavy cash flows. While many wives continue to keep daily ledgers, most lobster enterprises employ professional accountants to handle taxes and payroll and to generate financial statements. Supplies such as bait bags that were once homemade are now usually purchased, and the captain and crew perform most of the routine maintenance tasks. Still, fishermen's wives continue to make vital contributions to the fishing enterprise. Most run errands, picking up vessel replacement parts and supplies when their husbands are at sea. Some have careers of their own, and their contribution to the household income allows their husbands to invest fishing income into the lobster enterprise.

Although lobstering in Southwest Nova Scotia has evolved into a highly capitalized small business enterprise, it is still very much a family affair. Fishing captains are usually the sons or close relatives of lobster fishermen. They are likely to have a family member on board as crew, and most captains hope to pass the enterprise along to a son or son-in-law. It is not uncommon to find a group of related lobster captains, perhaps brothers, pooling their resources to help a younger relative purchase a lobster rig. Lobster-fishing kin groups sometimes function as virtual cooperatives, sharing gear and facilities, and negotiating better prices by buying their supplies and selling their lobsters together.

Most lobster fishermen will insist that lobster fishing is not just a job, but a 'way of life,' a source of identity and pride with its own unique history, traditions, understandings and values. The captains I interviewed were hard pressed to imagine an occupational alternative that would provide them with comparable emotional - or financial - rewards. But like so many rural livelihoods, the lobster fishery has been penetrated by emerging global processes, both economic and cultural. So many 'outsiders', whether they are politicians, bureaucrats, scientists, corporate executives, environmentalists, or aboriginal Canadians, seem to have a stake - and a say - in how the lobster fisherman conducts his life. Inescapable media forms bombard the fisherman and his family with seductive cultural alternatives. In the following chapters I will examine the transformational forces that have confronted the lobster fishery, the effects these forces have had, the resistances the fishermen have mounted, the compromises they have made, and the principles that are at stake in the battle.

Chapter 1

THE RESEARCH PROBLEM: EXPLAINING THE TRANSFORMATION OF A 'POOR MAN'S FISHERY'

The traditional ways of life that characterized Atlantic Canadian fishing villages of the past have been well documented (Chiaramonte 1970; Davis 1991; Faris 1973; Hughes et al. 1960; Matthews 1976; Richardson 1960; Wadel 1969). As recently as the 1950s, residents of many inshore¹ fishing communities in Atlantic Canada were still constructing their 'life-worlds' largely from the natural and human resources close at hand. A few local agents - civic leaders, merchants, fisheries officers, schoolteachers and clerics - mediated most exchanges with the greater political, economic and cultural systems outside the community. Changing conditions in the 'outside world', and particularly changes in the international market for fish or in government fisheries policies, could affect local livelihoods profoundly, but members of Atlantic Canada's inshore fishing communities rarely had the opportunity to negotiate these conditions or their consequences (Apostle et al. 1998: 52; Calhoun 1991: 1; Davis 1984a: 133; Davis 1984b: 341; DeWolf 1974: 6). Fishermen were obliged to take the prices offered by the local fish merchant, and to fish according to regulations set on high, at least to the extent that local fisheries officers were willing or able to enforce these regulations.

After the Second World War, and even into the 1950s, many small inshore fishing communities in Southwest Nova Scotia were still cut off from the greater political, economic and cultural systems by geographic remoteness and by poor land transportation infrastructure (Hughes et al. 1960; Richardson 1952). They were isolated by limited communications technology, by minimal educational opportunities, and, particularly in the lobster fishery, by a lingering mercantile system of trade. Needless to say, this isolation severely restricted the life opportunities available to community members. They

¹ 'Inshore' or 'coastal' fishermen work fairly close to shore, and often in sight of it. 'Offshore' or 'deep sea' fishermen go much further out. Inshore vessels are relatively smaller, typically owner-operated, and they usually return to port after a day of fishing. Though there are important offshore fisheries in Southwest Nova Scotia, inshore fishing predominates in most communities. The LFA 34 lobster fishery is an inshore fishery. Traditionally it was conducted within twenty nautical miles of shore, but in recent years some fishermen have moved to 'midshore' areas further out. The inshore fishing area legally extends to fifty nautical miles offshore.

were physically cut off from alternative markets for their labour and commodities. In order to survive in this isolated situation, community members were compelled to rely on each other, and on the natural resources that surrounded them. In this sense, the political, economic and social lives of these individuals were 'embedded' in their spatially bounded communities.

Apostle and colleagues (1998: 236-7) have argued that two distinct levels of embeddedness occur in isolated rural communities. At the first level, individuals are embedded in the political, economic and social institutions within the community: family, kin, neighbourhood groups, church congregations, voluntary and occupational groups, and local government. At the second level, these institutions are embedded in each other: they are so interconnected by common membership and normative standards that they shape each other interactively. Together, these institutions also serve to symbolize and identify the community itself, both to its members and to outsiders. Furthermore, the rural community itself is physically embedded in a bounded geographical space, and it is symbolized and identified by patterns of local resource exploitation, for instance as an "inshore lobster fishing community."

These various levels of embeddedness developed in inshore fishing communities as necessary ways of cooperatively coping with isolation, and they are surely what fishermen refer to when they talk about their 'way of life'. This way of life was not only necessitated by isolation, but also enhanced by it. While residents of inshore fishing community in Southwest Nova Scotia could expect very little assistance from the outside world fifty years ago, they could also anticipate very little outside interference in the 'life-world' they had constructed for themselves. There were far fewer legal restrictions on their access to publicly owned natural resources on land and sea, and what restrictions there were, were less stringently enforced. This is not to say that a situation of open access existed. Since the welfare of community residents depended almost entirely on the conservation of scarce resources, informal systems of distribution and sanctions emerged in each community. These systems reflected local resource conditions, local norms and conceptions of 'fairness', and locally existing relations of power. As a group, inshore

fishermen within a community usually claimed exclusive access to fishing grounds adjacent to the community based on historical precedent, and defended these grounds from incursions by fishermen from neighbouring communities (Davis 1991: 17).

Though inshore fishing communities of fifty years ago depended on trade with the outside world for survival, they were self-sufficient in many other ways. Historical accounts describe a remarkable institutional complexity in some Southwest Nova Scotia fishing communities immediately following the Second World War (Boudreau 1980; Bull 1978; Hughes et al. 1960; Richardson 1960). Small villages were observed to support community halls, schools, libraries, churches, banks, post offices, telephone exchanges, cooperatives, fish merchants, grocery stores, justices of the peace, and their own police constables. Residents were reported to be active in local fraternal, service, charitable, and sporting associations (Richardson 1952). The labour divisions and allocations within fishing households were designed to produce household self-sufficiency in the context of an unpredictable and seasonally available community resource base. Fishermen followed seasonal rounds. They pursued different fish species as they became available at different times of the year (Davis 1984a: 139). During times when there were no fish, fishermen might farm, cut timber, or construct or repair vessels and gear. The seasonal rounds involved various forms of household-based commodity and subsistence production that relied on labour contributions from other members of the household. All household members were likely to participate in self-provisioning strategies such as gardening, livestock rearing, berry and firewood gathering and canning. Most residents of Southwest Nova Scotia's inshore fishing communities at this time had little formal education, but they were able to develop and revise critical livelihood strategies by relying on a bank of 'traditional ecological knowledge' (TEK). Mailhot (1993: 11) defines TEK as "...the sum of the data and ideas acquired by a human group on its environment as a result of the group's use and occupation of a region over many generations."

There is a danger of idealizing and romanticizing life in remote communities of the past. Anthony Cohen (1985: 28 - 38) has exposed some of the myths surrounding isolated communities, myths often perpetrated by community members themselves, and later

enshrined by researchers who have interviewed them. These myths tend to contrast 'rural' communities with 'urban' society. The first is the myth of simplicity, and the 'face-to-face society'. In fact, social relationships can be quite complicated in a small community, where an individual must play a variety of sometimes conflicting roles for a small group of people who know the individual well and interact with him or her on a daily basis. A fishing captain with a crew of close relatives and friends must find a way to juggle his authoritarian role on the vessel with the appropriate behaviour as "... cousin, friend or neighbour who happens also to be skipper..." on land (Cohen 1985: 30).

The second myth is of egalitarianism. According to Cohen (1985: 30), the claim of egalitarianism is not necessarily wrong, but it is inadequately expressed:

It rarely distinguishes among equality as ideology ('We should all be equal Here'), as a rhetoric ('We are all equal here'), and as pragmatism ('We behave *as if* we were all equal here'). None of these should be confused with a description of actual social relations.

Bourdieu (1977) has described covert modes of domination that may be pursued in putatively egalitarian societies, whether equality is asserted by law or by traditional ideological consensus. Cohen (1985: 34) has cited the extensive social stratification observed in a remote Newfoundland fishing outport, while noting that such differentiation is rarely acknowledged publicly.

The third myth, according to Cohen (1985: 36), is of 'inevitable conformity', that an isolated community will be stripped of its local culture when penetrated by cosmopolitan influences, and will inevitably conform to the invading cultural norms. Cohen's central thesis is that, even in the event of major structural changes, communities can be recreated symbolically through the creative adaptation of local myths, rituals, and traditions.

To summarize, historical accounts (Boucher 1980; Bull 1978; Davis 1991; Hughes et al. 1960; D. Pothier 1980; Richardson 1952; Richardson 1960) portray the typical Southwest Nova Scotian inshore fishing community immediately after the Second World War as a study in embeddedness. The social structures informing and influencing community members, the enduring, predictable patterns of human relationship, were heavily

mediated by local level institutions, norms, values, and social roles. The community was very dependent on trade with the outside world, but otherwise fairly isolated from that world. In this isolation, a network of local institutions emerged in the community to address local political, economic and social needs. The local economy was undercapitalized and unremunerative, but it was informed at the very least by an expressed ideology of egalitarianism and fairness that limited overt class differentiation. The mode of fishing provided, at least in theory, for the gradual training and advancement of all qualified young men to the highest occupational status of captain. The fishing household was organized as a self-provisioning commodity and subsistence production unit. The community's fishermen claimed adjacent inshore fishing grounds as an exclusive common property. Informal rules and sanctions regulated access to community fishing grounds and addressed issues of conservation with little interference from state agencies. A locally relevant bank of traditional ecological knowledge informed these livelihood and conservation strategies.

In the last fifty years, the lobster fishing communities of Southwest Nova Scotia have become disembedded. This is to say that the patterned relationships into which community members enter are much less likely to originate at the community level. To understand this shift, it is helpful to consider the changing nature, influence and relationship of three primary sources of social order: the community, the market, and the state (Streeck and Schmitter 1985: 1). As Apostle and colleagues (1998: 9) have pointed out, the fisheries are structured by the interaction of all three of these institutional orders, though the balance of influence will vary over time and place. In recent years participants in the LFA 34 lobster industry have been influenced more immediately by structural transformations occurring at the market and state levels, rather than being influenced by these transformations indirectly through the mediation of community level institutions, values, norms, and social roles. According to Streeck and Schmitter (1985: 5), the guiding principle for the formation of structures for coordination and allocation of resources at the community level of analysis is group solidarity. The guiding principle at the market level is dispersed competition based on economic efficiency and rationality. At the state level of analysis, the guiding principle for the formation of structures is

hierarchical control. In recent years, the latter two principles have predominated in structuring the LFA 34 lobster industry.

As Atlantic Canadian fishing communities have become disembedded - as structures originating at the market and state levels predominate - individual community members have ventured into new and different political, social, and economic relationships. To complicate matters, structures originating at the market and state levels are undergoing rapid transformation themselves, under pressure from new paradigms for the nature and use of common property resources and from the phenomenon loosely described as 'globalization'. At the market level, the lobster industry has moved from a mercantile capitalist strategy focused on profit from the exchange of goods to an industrial capitalist strategy of investment in the means of production, market expansion, and divisions of labour. This transformation has produced increased cash flows and debt, and increased class differentiation at the community level. At the state level, the Canadian government has withdrawn from the project of sustaining coastal communities, and shifted its emphasis toward protecting the resource itself. This shift has been manifest in increased regulation and enforcement, including reduction of access through limited licensing, and in efforts to develop a comprehensive regional resource management strategy grounded in state scientific research. The state has largely reassigned the task of distributing fishery resources to the marketplace through the transferable licensing system.

Much of the contemporary social scientific literature covering the Atlantic Canadian fisheries deals with the causes and effects of the 'fisheries crisis', the recent decline or collapse of so many of the region's fish stocks. The fisheries crisis has forced a major restructuring of the Atlantic Canadian fishing industry, and transformed traditional ways of life in many fishing communities. Though the lobster industry of Southwest Nova Scotia has been spared from this crisis, it has not escaped structural transformations or social changes in its communities. As discussed in the Introduction, the LFA 34 lobster fishery has experienced significant changes in technology, in the labour process, in capitalization, in markets, in federal resource management policy, and in community and household relationships in the past fifty years. In other fisheries such transformations

have often been accounted for as either the causes or the effects of declining or collapsing fish stocks. The fact that such transformations have also occurred in the robust LFA 34 lobster fishery invites a search for explanations beyond the status of the resource itself. Such a search has been the basis of inquiry for this research project.

The research problem has been to discover the forces that have transformed the LFA 34 lobster fishery from a modest, small-scale occupation deeply embedded in the local community social structure and open to all, to a highly capitalized lucrative enterprise accessible to only a small percentage of community members, and one which is closely regulated by the federal government. This 'rationalization' of the LFA 34 lobster fishery has not occurred under the duress of a stock crisis, and yet it is widely accepted in principle by the participating fishermen. This acceptance can only be explained by changes in attitudes among the fishermen themselves, and I will argue that these changes in attitude were inspired by new organizational paradigms originating at the market and state levels. The fundamental attitudinal change has been in what constitutes justice in the distribution of a common property resource.

Theoretical Literature Relevant to the Research: The Problem of Justice

Justice is the first virtue of social institutions, as truth is of systems of thought. A theory however elegant and economical must be rejected or revised if it is untrue; likewise laws and institutions no matter how efficient and well-arranged must be reformed or abolished if they are unjust.

John Rawls, *A Theory of Justice* (1972: 3)

What Canadian fisheries share, and what distinguishes them from most other industries, is their dependence on a common property resource: a resource that in theory belongs to all Canadians, and that by law is to be protected by the state. As a common property resource, even the relatively robust LFA 34 lobster stocks need some form of protection from overexploitation. LFA 34 lobster can be called a 'scarce' resource because the demand for it exceeds the supply. When many people claim rights of access to a scarce resource, questions of distributive justice and fairness inevitably arise (Brunk and Dunham 2000: 9). There is a tradition of informal, community-based management of

inshore fishing resources in this region (Davis 1984a, 1984b, 1991; Recchia 1997), but the Canadian government has expanded its legal role as arbiter in the distribution of these resources over the last fifty years. From time to time, in response to emerging political, economic, social, and conservation pressures, and on the advice of commissions of investigation, the federal government has revised and restated the goals of fisheries management. New goals have justified changes in distribution policy, and a rethinking of the basis for distributive justice itself. State-imposed interpretations of distributive justice have increasingly displaced the traditional, locally evolved standards for justice in common property distribution that existed in LFA 34 lobster fishing communities and elsewhere in the region. These new understandings of justice have also taken root in the minds of many lobster fishermen. Informal, community-based common property resource allocation systems have become less influential, and lobster fishermen have developed new conceptions of what counts as 'fair' and acceptable in their livelihood practices.

Conceptions of justice underpin human societies and shape the relationships between a society's constituents. The idea of 'justice' is deceptively simple: to ensure that each person receives what he or she is due (Cohen 1986: 1). The problems of how these 'just deserts' are to be determined and how they are to be provided continue to engage philosophers, politicians and ordinary citizens alike. I will not attempt here to review the many models of justice that have come forth, or all the arguments made for or against them. I will restrict my discussion to a description of models relevant to fisheries management. There are two basic types of justice, retributive and distributive (Buchanan and Mathieu 1986: 13). Retributive justice, usually associated with criminal justice, is designed to punish or reward specific deeds. Distributive justice, sometimes called 'social' or 'economic' justice because it is designed to mitigate social and economic inequalities, is more relevant to the fisheries management practices I am considering here.

Distributive justice can be evaluated in an outcome, the distribution itself, or in a procedure, the way the distribution is accomplished. To use an example from John Rawls (1972: 85), if a cake is to be divided among a number of people, a just outcome or

distribution might be that each person receives a piece of equal size. A just procedure might be to ask one person to divide the cake evenly and to allow the others to pick their pieces first. This is an ideal case. In most instances of distributive justice it is difficult or impossible to devise a just procedure that will guarantee a desired outcome. In most instances, either the means ('procedural justice') are used to justify the outcome, or the ends (a predetermined 'just distribution') are used to justify the means or procedures.

In his seminal (and controversial)² *A Theory of Justice*, Rawls observed that the structure of an ethical theory is determined by the way it defines and links the concepts of 'good' and 'right'. On this basis, he distinguished two schools of thought on justice (1972: 22-33). One school of thought springs from the notion that there can be an independent definition of 'the good'. This definition can be an ideological or an intuitive construct (such as perfectly equal distribution), or more likely a utilitarian construct argued to represent the greatest net satisfaction possible within the relevant population. In this case what is considered to be 'right', or 'just' is that which produces the predefined good most effectively, so here the focus is on a predetermined just distribution. The second school of thought is based on the notion of 'fairness', and exemplified in the social contract: "that to which all concerned parties would consent." Under this 'justice as fairness' model, what is considered to be 'right' or 'just' is that which is found to be fair by consensus of parties concerned. Here, the focus is on procedural justice.

According to Rawls, the classic utilitarian distributive strategy is to imagine the body politic as an individual:

Just as the well-being of a person is constructed from a series of satisfactions which are experienced at different moments in time and which constitute the life of an individual, so the well-being of society is to be constructed from the fulfillment of the systems of desires of the many individuals who belong to it (1972: 23).

But Rawls is unsatisfied with the arbitrary outcomes of this strategy:

The striking feature of the utilitarian view of justice is that it does not

² *A Theory of Justice* has been called the first serious attempt at a comprehensive political theory to be made in the twentieth century (Kukathas and Pettit 1990), and as such has been the focus of intense scrutiny and criticism. I use the justice models described by Rawls as heuristic devices in discussing fisheries policy, without making any claims as to their ethical validity as models for justice systems.

matter, except indirectly, how this sum of satisfactions is distributed among individuals any more than it matters, except indirectly, how one man distributes his satisfactions over time. The correct distribution in either case is the one that yields the maximum fulfillment. Society must allocate its means of satisfaction, whatever these are, rights and duties, opportunities and privileges, and various forms of wealth, so as to achieve this maximum if it can. But in itself no distribution of satisfaction is better than another except that the more equal distribution is preferred to break ties (1972: 26).

More fundamentally, he points out that in a utilitarian model what is good must be determined prior to, and as a condition for what is right (1972: 24). Under these conditions, what is found to be good will inform the procedures required to accomplish it, even if the procedures themselves seem unfair to some of the parties affected by them.

Rawls offers 'justice as fairness' as a more satisfactory way of establishing and accomplishing the good (1972: 28). In this case, what is good in a given situation is the outcome of procedures negotiated by the affected parties. In Rawls' estimation, justice as fairness is possible because even parties competing for resources have the ability to step out of the situation, disregarding personal interests momentarily in order to reach a consensus on just procedures to resolve problems of distribution. In a later work, Rawls specifically applies the notion of the priority of right or fairness over good to the political domain (1993). Here he elaborates on the 'political constructivism of justice as fairness'. He argues against measuring the effectiveness of political institutions and their procedures on their ability to realize a preconceived good. Rather, he suggests that institutions and procedures should be constructed from the inevitable overlapping consensus of opposing parties on at least some rational principles of fairness. His expectation is that institutions and procedures constructed on what is commonly held to be fair would themselves produce and thereby determine what is good in a given situation (1993: 93). Put briefly, Rawls recommends pure procedural justice as the means to achieve justice as fairness (1972: 120).

Rawls' social contract-based model of justice as fairness has been criticized for (among other things) ignoring or glossing over the unruly practical realities of social systems and human behaviour 'on the ground' (Kukathas and Pettit 1990: 122-33; Nagel 1978: 4-16).

David Harvey, for instance, while equally dissatisfied with utilitarian models of justice for the allocation of natural resources, doubts that Rawls' 'overlapping consensus' could be discovered in contemporary society:

...any such discourse has to transcend the narrow solidarities and particular affinities shaped in particular places...and adopt a politics of abstraction capable of reaching out across space, across multiple environmental and social conditions that constitute the geography of difference in a contemporary world that capitalism has intensely shaped to its own purposes (Harvey 1996: 400).

More recently, a group of social and natural scientists has sought to incorporate ecological concerns into a model of distributive justice in fisheries management (Coward et al. 2000). 'Ecosystem justice' places the fisheries within the larger marine ecosystem and tries to address the unspoken 'claims' of commercial and non-commercial marine organisms as well as those of the system's human constituents. Consequently, an independently determined ideal outcome or end-state of ecological balance takes precedence over issues of procedural justice, and over the conventional issues of justice as fairness that occupy an exclusively human social contract (Brunk and Dunham 2000: 26). Fairness is, however, a central theme in a secondary process called 'creative justice'. Creative justice validates multiple forms of fisheries knowledge. It recognizes that government scientists, members of the fishing community, environmentalists and other concerned parties have each developed useful systems of knowledge that vary according to each party's relationship to (or position within) the marine ecosystem (Neis and Morris 2000: 177-81). Creative justice demands a consensual synthesis of all of these accounts to properly define a desirable outcome or ecological end-state, and to formulate policies to accomplish this outcome. These policies must include measures to restore and preserve the ecosystem but they must also address distributive justice. Who will have access to the resource, and how will their access be regulated? The ecosystem justice model argues the 'adjacency principle', that fishing communities adjacent to the resource ecosystem are the logical candidates for access, since they are geographically embedded in the ecosystem already. While the federal government is best positioned to enforce conservation standards derived through the creative justice process, community-based management groups are better qualified to fairly distribute access to the resource among community members. For this reason, proponents of the ecosystem justice model recommend a co-

management system, with federal and local responsibilities divided along these lines (Sumaila and Bawumia 2000: 150).

Canadian fishermen depend on a scarce common property that belongs to everyone, but to no one in particular. As a consequence, Canadian fisheries management is an exercise in distributive justice, but as we have seen, a range of competing versions of distributive justice is in play here. There has been a historical tension in Canadian fisheries management between the ideals of utility and fairness, between productive efficiency and social justice, between maximum sustainable yield and equitable distribution of benefits. This tension stems from issues of authority. Who really has the authority to regulate the fisheries? What factors legitimate this authority? Perhaps most importantly, what factors can call the legitimacy of a fisheries management regime into question?

Sources of Authority

Max Weber's (1947: 328ff.) three ideal types of authority claim legitimacy on charismatic, traditional, and legal-rational grounds respectively, though Weber warns that none of them are likely to be found in a 'pure' form.³ The modern bureaucratic state achieves its power by establishing a monopoly on the legitimate use of force within a given territory (Weber 1946: 78), but it confers authority on its departments and agencies on the basis of legal and rational principles. The authority of a department is defined and limited by legislated rules and procedures, and restricted to a designated area of expertise. In the modern state, the authority of a department is legitimated by technical competence in the designated area. "Bureaucratic control means fundamentally the exercise of control on the basis of knowledge. This is the feature of it which makes it specifically rational" (Weber 1947: 339). By this account, the authority of the federal Department of Fisheries and Oceans to regulate the Canadian fisheries is established upon and legitimated by its generation and control of fisheries knowledge, and by its adherence to legislated rules and procedures. Therefore, the legitimacy of the Department's fisheries management

³ Charismatic authority is legitimated by the perception of exceptional, and perhaps even superhuman powers in an individual. Traditional authority is legitimated by the perception of the sanctity of the existing order and relations of power. Legal-rational authority is legitimated by the perception that those in power have the legal right to command because they have achieved their position by following normative rules.

regime can be (and has been) called into question in disputes over the validity of its fisheries knowledge or the justice of the rules and procedures it follows.

Though legal authority can be challenged by rational arguments against the validity of the knowledge system that legitimates it, those in authority usually set the terms of reference for this discussion. The DFO has a legal mandate to define and dictate fisheries management objectives, and in doing so it influences the way the resource is described, measured, and bounded. Dorothy Smith (1990: 67) argues that by specifying the forms in which data are collected, and by serving as repositories of historical data, state institutions can control and manipulate 'factual' accounts of the everyday world: "Accounts are shaped to fit the textual realities called for within the relations and apparatuses of ruling" (Smith 1990: 103). Like the 'local' knowledge systems of fishermen, 'scientific' knowledge systems are constructed from carefully selected data to accomplish specific purposes (Finlayson 1994: 12). DFO scientists collect and organize data and create knowledge specifically to inform a fisheries management regime directed by state policy, but because this knowledge is 'scientific' it is presented as an objective and factual account. Legal-rational authority relies on claims of an objective scientific discourse to retain legitimacy, and, as Foucault (1980: 84) has remarked, scientific discourse has a centralizing power. Scientific knowledge of the fisheries is continually challenged and revised, but the DFO sustains its authority by controlling the system under which this knowledge is produced and organized.

A bureaucratic agency such as the DFO can sometimes avoid challenges to the legitimacy of its management regime by transferring authority to lower level institutions. It can, for instance, transfer some of the responsibility of distributive justice to authorities at the provincial, sectoral, or community levels - or to the 'invisible hand' of the marketplace. The DFO has made this transfer in a number of instances, usually favouring market forces. It has granted fish quotas to offshore corporate fleets through Enterprise Allocations (EAs) since 1982, and to herring seiners (since 1983) and groundfish dragger captains (since 1990) through Individual Transferable Quotas (ITQs) with the provision

that rights to these quotas may be bought and sold in the marketplace (Apostle et al., 2002: 16-18). Limited entry lobster licenses may be bought and sold freely. The DFO has also assigned small groundfish quotas to some community-based inshore fishermen's associations, allowing an internal distribution process. In general, the DFO has avoided assigning distributive authority to lower level institutions other than the marketplace itself, and perhaps with some justification on legal-rational grounds. In lower level institutions, particularly at the rural community level, traditional and charismatic forms of authority come into play. Local power structures may negotiate versions of distributive justice with minimal reference to legal or rational standards. Because of this, and because it is not subject to broad public scrutiny, locally conceived distributive justice may reflect local prejudices, power relationships, and 'traditional' class and gender bias (Gringeri 1996).

When fishermen dispute the authority of the DFO in Southwest Nova Scotia, they often 'work around' this authority, rather than trying to challenge it directly through legal or rational arguments. If a fisheries regulation seems unfair, or based on questionable scientific knowledge, fishermen may simply ignore it. Local sources of traditional or charismatic authority, well-respected local fishermen for instance, may support them in this, and the DFO is hard pressed to assert its authority in cases of mass civil disobedience. Foucault (1980: 81) calls this "an insurrection of subjugated knowledges." A number of studies from across the North Atlantic region describe informal, community-based fisheries management systems that have developed without state authorization (Acheson 1988; Bowles and Bowles 1989; Jentoft and Mikalsen 1994; Taylor 1987). Without formally contesting state authority on legal-rational grounds, fishermen have circumvented that authority by adhering to local standards of distributive justice.

The exercise of authority: an overview of fisheries management paradigms

Daniel Bromley (1991: 22-31) suggests that natural resource management strategies take four basic forms: (1) state property regimes; (2) private property regimes; (3) common property regimes; and (4) non-property (open access) regimes. Under state property

regimes, the government grants individuals a revocable privilege of access that is subject to complete state regulation. Under private property regimes, the state allows individuals to hold exclusive, enduring, and transferable rights of access provided they proceed in socially acceptable ways. Under common property regimes, the state grants a group of individuals the authority to allocate access for the benefit of its members, and to exclude access to non-members. Under non-property regimes, no one is legally excluded or restricted, so any regulation of access is extra-legal, accomplished perhaps by normative sanction or individual force. The first three regimes rely directly on legislative and judicial support and enforcement from the state. The fourth regime is not relevant in the discussion of the highly regulated Canadian fisheries.

L. S. Parsons (1993: 705-9) points out that over the years, Canadian federal fisheries policy has explicitly pursued three types of goals, goals that are frequently in conflict with one another. These goals can be expressed in terms of conservation objectives, economic objectives and social objectives respectively.⁴ Anthony Charles has represented the three explicit policy objectives as a set of fisheries management paradigms and suggests that:

A Paradigm Triangle can be envisioned forming a framework within which the various fishery players are situated, some closer to one of the three extremes than others. Fishery conflicts then reflect tensions between the three corners of the triangle, while attempts at conflict resolution typically involve a search for the middle ground (Charles 1992: 9).

The conservation paradigm is biologically based and centres on protection of the fish stocks. The idea of conservation has been almost universally accepted, at least in principle, since the beginning of fisheries management, because a fishery can't be sustained without healthy fish stocks. But Charles points out that as a management paradigm, conservation does not address important social and economic issues that arise in the fishing industry: "Within this paradigm, fishermen are simply components of the fleet, which must be controlled in order to protect the fish" (Charles 1992: 9).

⁴ To these Parsons adds what he considers an impossible and yet implicit fourth policy objective of perpetual biological, economic and social stability.

The rationalization paradigm focuses on the economic efficiency of the fishery. The goal is a sustained maximization of wealth creation. The market is normally expected to determine the distribution of this wealth. Rationalization involves efforts to reduce over-capacity by limiting entry and imposing catch quotas, in effect introducing forms of private property rights to a public resource. Rationalization enjoys some popularity among conservationists as well, since a sustained maximization of wealth requires protection of the resource. Reduction of capacity might be seen as a way to reduce effort, and a smaller fleet with fewer players might be expected to be easier to control. As Charles notes, "Within this paradigm, fishermen are often viewed not as individuals but rather as profit-maximizing firms. Rationalization advocates usually wish to reduce the number of these firms to an 'optimal' level..." (Charles 1992: 10).

The social/community paradigm is primarily concerned with the proper distribution of access to the resource: it is the only one of the three to consider 'fairness' as a priority. Rather than most highly valuing the means of creating wealth, as does the conservation paradigm, or the ends, as is the case with rationalization, it values the fishery process itself. This is because the fishery process is embedded in and helps to animate, inform and sustain a larger community process that is believed to be worth preserving. In this sense the paradigm uses qualitative measures as well as quantitative ones. Reflecting Rawls' approach to justice as fairness, the greater good is assessed in procedures as well as outcomes.

As Charles make clear, the structure of Canadian fisheries management is relatively flexible, and management strategies have moved about within this 'paradigm triangle' to accommodate changing circumstances (Charles 1992: 48). These paradigms are especially useful for analyzing policy changes, as they seem to correspond with the first three of Bromley's resource management regimes discussed earlier. The conservation paradigm focuses on protection of the fish stocks, and is probably best fulfilled under a state property regime by a federal fisheries department less preoccupied with the social and economic consequences of such a strategy. The rationalization paradigm emphasizes the creation of wealth and the market process and pairs well with a private property

regime, where the market determines questions of distribution, and conservation can presumably be accomplished through 'stewardship.' Because the social/community paradigm is concerned with fairness of distribution and institutional maintenance and development at the community level, it is best satisfied under a common property regime, where the immediate users of the resource are corporately responsible for many aspects of resource management and allocation. Historically, a state property regime centering the conservation paradigm has predominated in the management of the Atlantic Canadian lobster fishery, but Charles' paradigms and Bromley's management regimes are ideal types. The actual policy and practice of lobster fishery management at any given time has contained elements of each. Fishery policy debates inevitably originate from supporters of either an alternative regime or a different paradigm, and compromises have been made over time.

Globalization

Following the Second World War, the Canadian government made a sustained effort to manage the fisheries in ways that would promote community and regional development in Atlantic Canada. In recent years this project has been largely abandoned. The focus of Canadian fisheries management policy has now returned from sustaining the social to sustaining the biological, from community and regional development to resource conservation. Visions of wisely regulating the livelihood practices of individual fishermen to conserve and exploit local resources sustainably and with increased economic efficiency have replaced visions of wisely utilizing local resources to sustain fishing communities (Sinclair 1985: 116).⁵ This shift has not occurred in isolation, and it is more than just a reflection of changing political ideals in Canada. It is also a response to recent globalization processes, characterized by highly competitive global commodity markets and the growing legitimacy of market mechanisms (Apostle et al. 1998: 3).

A new ecological awareness informs Canadian fisheries policy, but the policy itself is also tailored to meet the demands of the new and more competitive global marketplace by

⁵ The exception to this rule has been the Aboriginal Fisheries Strategy (AFS), which is designed to sustain aboriginal communities.

encouraging the highest sustainable rate of exploitation at the lowest possible cost. Globalization has forced the restructuring of states and economies, and a qualitative shift in modes of social organization (McMichael 1996: 27). A national economy obliged to carry the costs of ambitious social programs for distributive justice will be at a competitive disadvantage to rival economies free from these constraints. Gray (1998: 88) argues that the core policies of social democracies cannot be sustained in the new global economy because indigenous capital will migrate to 'free market' countries with lower taxes and more permissive labour and environmental laws.

Global economic pressures have been at least partly behind the Canadian government's decision to abandon the social democratic project of community and regional development through a 'social fishery' policy, but there is also some question of the usefulness or relevance of community-level institutions - and localized conceptions of justice as fairness - in a globalizing world. Gray (1998: 57) describes a process of 'de-localization', where activities, relationships, and consumer preferences are no longer bounded by local culture or conventions. According to Arjan Appadurai (1990: 1), "It takes only the merest acquaintance with the facts of the modern world to note that it is now an interactive system in a sense which is strikingly new. ...today's world involves interactions of a new order and intensity." Whether these interactions are described in economic (Watts 1992: 66ff.), political (Harvey 1996: 334ff.), or cultural (Appadurai 1990) terms, they present attractive opportunities as well as challenges to people who have traditionally found their livelihoods in the primary industries in remote areas. New transportation and communication technologies have leveled the barriers of time and space, of culture and tradition. This has, however, led to the disembedding of economic, political, and social activities from the fabric of local communities (Apostle et al. 1998: 326ff.) and hence to the marginalization of locally constructed systems of distributive justice. Local entrepreneurs have benefited from the removal of these barriers, though sometimes at a cost to fellow community members. In many cases these barriers protected the local institutions and traditions that, formally or informally, ensured some community standard of equity in resource allocation. Globalization has also brought about a decline in household supplementary subsistence production, a traditional

mainstay in rural economies. This is partly due to the commodification of many rural necessities (food, shelter, heat, means of production) as well as luxuries, and partly due to a new focus on money as the "proper object of desire."⁶ Globalization has led to increased control of local resources by non-local and often transnational enterprises.

The Labour Process

The pressures of globalization have transformed rural labour processes around the world (Gringeri 1996; Li 1996; McMichael 1996; Watts 1992). In Southwest Nova Scotia, the typical lobster fishing enterprise has evolved from a single component of a pluralistic household-based livelihood strategy that incorporated unpaid family labour and subsistence production, to a free-standing capital-intensive small business. The historical importance of the household as commodity production unit and the pervasive practice of 'seasonal rounds' of labour in rural areas have been well documented (Barrett 1979; Davis 1984b; Matthews 1993; Nemec 1979; Sacouman 1979; Sinclair 1980; Stiles 1979; Veltmeyer 1979). The debate over whether these traditional approaches to the rural livelihood are contemporary alternatives to the capitalist labour process or are simply examples of the indirect subsumption of labour value (Davis 1980; Flint 1996; Friedmann 1980; Goodman and Redclift 1985) is noted, but the focus of my research is elsewhere. The focus is on the transition of the labour process in most lobster fishing enterprises from part of an often unwaged, family based, informal and pluralistic livelihood strategy to a more openly capitalist small business model. Matthews lists three causes for the transformation of the social organization of fishing in recent years: developments in harvesting technologies, developments in processing technologies and transformation of access through licensing and limited-access regulations (Matthews 1993: 30-2). Apostle and colleagues emphasize the effect of global processes on the transformation of work forces in remote fishing regions (Apostle et al. 1998: 8 ff.). In particular, these global processes include internationally organized modes of production, and the vertical integration and consolidation of an international processing and marketing industry.

⁶ Harvey (1989: 100-2) argued that postmodern thinking favours the signifier over the signified, that money has become the signifier of social labour, and therefore a form of social power to be appropriated.

In Canada following the Second World War, both government agencies and commercial fish processors promoted the 'Fordist' model of industrial organization (Braverman 1974; Gramsci 1971) as key to the modernization of the fishing industry (Apostle et al. 1998: 62). The Fordist model was based on principles of high volume, efficient mass production, and a work force paid well enough to consume what is produced. Labour processes were broken down into their simplest component tasks and technical knowledge becomes the monopoly of management as employees become 'deskilled'. Following the economic recovery of western Europe and Asia from World War II, the aggressive entry of Japan and other Asian 'tigers' into international trade, and finally the energy crisis of the early 1970s, established multinational corporations faced intensified competition in both quality and cost of merchandise. In order to reduce both labour costs and capital outlays, large corporations began contracting out less profitable processes of production to smaller companies with cheaper and frequently non-union labour forces, often located in poorer rural regions. This transformation has been characterized as the shift from a Fordist to a 'flexible' regime of accumulation (Lipietz 1992: 2)⁷. This shift has either created or expanded the rural proletariat in many areas and has been described as a new 'spatial division of labour' (Marsden 1993: 131-4). It has also prolonged the existence of many 'household' enterprises in primary industries such as farming, fishing and forestry, since in each of these sectors households carry out the high-risk segment of an otherwise profitable vertically-integrated industry. Yet precisely the system that preserves household enterprises may also sustain them in a condition of perpetual crisis. Both individual enterprises and geographical regions must vie against each other for a niche in a vertically integrated market dominated by increasingly monopolistic transnational giants.

This competition has led to the (sometimes excessive) capitalization and dominance of the more entrepreneurial family fishing operations, the failure of others, and an unprecedented rural class differentiation process (Sinclair 1985: 22-30). In the past,

⁷ Lipietz and others developed 'regulation theory' to overcome the economic reductionism associated with Marxism. The regime of accumulation refers to the organization of consumption as well as production. The 'mode of regulation' refers to the institutions and ideologies that support the regime of accumulation.

younger crewmembers on lobster vessels could anticipate eventually becoming captains themselves, when they had acquired the necessary skills and experience. Now, high entry costs prevent many qualified crewmembers from ever becoming lobster license holders, while the scions of wealthier fishing families are sometimes licensed by the time they are twenty. Distributive justice in the lobster fishery, formerly determined by experience, skill, and community standing, is now increasingly determined by the 'invisible hand' of market forces.

Women in fishing communities have experienced a variety of changes connected with the restructuring of the rural work force. Some married women have had to work harder, either within or outside the fishery, to compensate for a decline in their husbands' fishing earnings (Binkley 2000). Unemployment coupled with a decline in community institutions and traditions has demoralized some fishing communities, and led to increased incidences of alcohol abuse, domestic violence, and divorce (Davis 2000). On the other hand, increased opportunities for waged work in some communities (albeit frequently for minimum wages) have allowed rural women a potentially liberating alternative to the 'traditional' unwaged self-provisioning work that many were obliged to perform in the past (MacDonald and Connelly 1989: 71-2).

Summary

Over the last fifty years, the lobster fishery in Southwest Nova Scotia has evolved from a modest, small-scale component in a seasonal round of occupations, deeply embedded in the local community social structure and, at least ostensibly, open to all. It has been transformed from a 'poor man's fishery' into a highly capitalized, lucrative enterprise, accessible to a limited number of community members, more closely regulated by the federal government, and less closely by localized norms of conduct. This transformation has been facilitated by new perceptions, held by industry participants and federal policy makers, as to what constitutes distributive justice. With new conceptions of distributive justice, new issues of authority arise. Who has the authority to manage and regulate the distribution of fisheries resources, how is this authority legitimized, and how will it be exercised? These new conceptions of justice have emerged in a historical context, and

specifically in the context of globalization. Federal policy makers have retreated from policies based on the social/community paradigm of fairness in distribution and community development at least partly because they fear that the added costs and inefficiencies will render Canadian commodities uncompetitive in the global marketplace. Instead, they have moved toward the conservation paradigm as the focus of fisheries management policy, and consigned problems of distribution to market forces. Globalization has also breached the barriers of time and space that shielded and nurtured localized systems of distributive justice as well as localized systems of traditional ecological knowledge. For these reasons, fishermen increasingly turn outward to the authority of the federal government for regulation and enforcement, and for scientific assessments of the state of the lobster stocks. The decline of localized systems of distributive justice, the increased capitalization of individual lobster fishing enterprises (encouraged by expanding global markets), and the withdrawal of the state from 'social fishery' policies, have facilitated class differentiation between captains and crew members in the lobster fishing labour force. These issues of justice, authority, globalization, and labour relations will be discussed in detail in later chapters.

Chapter 2

GEOGRAPHIC, HISTORIC, DEMOGRAPHIC AND ECONOMIC CONDITIONS IN SOUTHWEST NOVA SCOTIA

It is only a two hundred kilometre drive down the main highway from one end of Southwest Nova Scotia to the other, but within this short distance there are seven major and historically distinct French and English settlement areas and two Mi'kmaq First Nations reserves. Cultural and ethnic plurality has shaped the development of Southwest Nova Scotia, and it explains many of the attitudinal differences that exist among the lobster fishermen of LFA 34.

The Lay of the Land

The coastline of Southwest Nova Scotia stretches from Barrington Passage and Cape Sable Island in the south to Digby Neck and the Islands in the north, taking in the entire southwestern end of the province. While it is a two hundred kilometre trip from Barrington to Digby on the main road, the many coves, estuaries and peninsulas along the way carve out a much longer coastline. Southwest Nova Scotia includes a large wooded inland area, but most of its population is settled along the coast. There is some commercial farming in the region, though its soils and climate do not rival those of the fertile Annapolis Valley to the northeast. The inland woodlots support a small forest products industry. Southwest Nova Scotia has attracted summer visitors and cottagers for generations. But the fortunes of this region, more than any other in Nova Scotia, have been bound up with the sea. From its earliest colonization, this has been a land of seafarers, of fishermen and merchant mariners, of smugglers and pirates, of shipping merchants and chandlers, and of designers and builders of vessels.

Though habitation is almost continuous along the coast in hundreds of small fishing villages and hamlets, the boundaries between the seven major settlement areas are readily apparent. A traveler crossing the little brook that separates the Yarmouth Municipality from Clare will notice a sudden change in surnames and in spoken language, and changes in architectural style and the spatial distribution of housing. The careful observer will

also notice the replacement of the small but ubiquitous Baptist churches by larger but more distantly spaced Roman Catholic ones. A similar shift in mother tongue and religion occurs at each settlement boundary. For over two hundred years, seven settlements of transplanted Acadians and transplanted New Englanders have coexisted side by side, each culture literally sandwiched between the other, with surprisingly little compromise of cultural and social integrity on either side. While language barriers and cultural allegiances may explain the 'two solitudes' of Acadian and New England settlers, there are also clear cultural distinctions between the settlements *within* each of these ethnic groups. Marriages are usually patrilocal, so surnames that are common in one settlement, whether they are French or English, may well be scarce in the next settlement with the same national roots.

Just as the ethnic communities of Southwest Nova Scotia have kept to themselves over the years, the region itself, composed of Digby and Yarmouth Counties and the western part of Shelburne County, appears to have been isolated in many ways from the rest of the province. Perhaps this is because the greater part of its commerce, past and present, has been with New England rather than with the rest of Nova Scotia. Furthermore, in two hundred years there has never been much in-migration to the region from other parts of Nova Scotia, from the rest of Canada, or from abroad. For the last hundred years the population of the region has remained almost constant at about 54,000. None of Nova Scotia's premiers were born in or represented this region. Unlike many underdeveloped regions of Nova Scotia, the Southwest has not been a target for serious regional development through infrastructural 'megaprojects' or government-subsidized industrial plant relocations. Most business enterprises here were developed by local people rather than transplanted from 'away'.

A Brief Early History of Southwest Nova Scotia

Native Mi'kmaq people have lived in Southwest Nova Scotia for many centuries, and European fishers and fur traders visited and occasionally settled in the area long before it was formally colonized (Crowell 1923). The first systematic exploration of the area authorized by a head of state was organized by the French Huguenot adventurer, Pierre

de Gua, Sieur de Monts, and guided by the French royal geographer Samuel de Champlain. This expedition went forth in 1604, just as France had emerged from fifty years of civil war and was trying to establish itself as a mercantile nation (McCreath and Leefe 1982). It was a business venture. King Henry IV of Navarre granted De Monts a monopoly on trade, principally of fish and fur, in the area from what is now New Jersey to the tip of Cape Breton Island. In exchange, De Monts would establish a French beachhead in North America (Ross and Deveau 1992: 7). During the first summer of the expedition, Champlain and de Monts carefully explored the coastline from Cape LaHave around to the Minas Basin. In the second summer they continued down the coast of modern New Brunswick, finally turning back after reaching Cape Cod fifteen years before the *Mayflower* arrived in nearby Plymouth. The map Champlain drew is a marvel of detail and accuracy. Cape Sable and Cape Forchu are among the spots in Southwest Nova Scotia still known by the names given by Champlain and de Monts. The early history of the French settlement of Acadia is sketched in tantalizing, fragmentary records of intrigue, feuds, misadventure, and double-dealing. As it turned out, so many parties were already involved in exploiting the natural wealth of the region that de Monts and his successors were never able to monopolize access to resources sufficiently to recover their investments, let alone to realize a profit. Nevertheless, the people these aristocratic speculators brought with them to do the hard work, French fishers, farmers and skilled artisans, found the land quite to their liking. They were able to develop a viable subsistence economy enriched by trade, mostly with the New England colonies. Altogether, only about fifty families came from France to colonize Acadia, but in a century their descendants had established a productive and widely dispersed colonial society with a population of over ten thousand.

By the end of the seventeenth century there were French settlements in many parts of what are now the Canadian Maritime Provinces, but this account will focus on settlements in Southwest Nova Scotia. At that time, the majority of the French colonists were dispersed in the vicinity of the colonial administrative centre at Port Royal, twenty-five kilometres northeast of what is now the Digby County line. Port Royal had fallen four times to British assaults in the seventeenth century, but each time a subsequent treaty

returned control to the French. In 1699, Joseph Robineau de Villebon, the French Commandant, toured the coast from the Minas Basin to Cape Breton. He reported no habitation between Port Royal and Cape Forchu, but considerable settlement and exploitation of the fishing, agricultural, and forest resources from Cape Forchu to Cape Sable Island (c.f. Webster 1934: 132-40). Villebon also noted the very visible and dominating presence of the New England fishery but optimistically speculated that, “The people of Boston realize quite clearly, from the orders they have received to withdraw from our shores, that their fishermen will not, in future, be permitted to seek shelter in our ports....” (c.f. Webster 1934: 139).

Port Royal fell to the British for the fifth and final time in 1710. In 1713, the Treaty of Utrecht transferred control of mainland Nova Scotia to Britain. Since nominal ownership of the colony had changed so many times in the past century, perhaps the Acadians, who constituted almost the entire European population there, were at first not overly alarmed (Ross and Deveau 1992: 27). Indeed, until the establishment of Halifax in 1749, the British did very little to develop their new holding. However, the struggle for supremacy in North America intensified. In 1755, the British engaged French military forces on the Isthmus of Chignecto near the major Acadian settlement at Grand Pré. The British governing council responsible to Governor Charles Lawrence in Halifax ordered all French inhabitants removed from the province as possible fifth columnists (McCreath and Leefe 1982: 232). While the potential of Acadian treachery may have been the rationale for this removal, the Council also belied its underlying intentions in its minute book: “...After mature Consideration, it was unanimously Agreed That to prevent as much as possible the Attempting to return and molest the (English) Settlers that may be set down on their Lands, it would be most proper to send them to be distributed amongst the several Colonies on the Continent...” (c.f. McCreath and Leefe 1982: 233).

Inhabitants of the Grand Pré area were the first to be deported. It was another year before the New Englander, Major Jedediah Prebble, returning to Boston from Louisburg with a battalion of militia and a company of artillery, was ordered by Halifax authorities to clear the Cape Sable district of Acadian inhabitants and to destroy their homes. Arriving in two schooners and eleven sloops, escorted by the warship H. M. S. Vulture, Prebble and his

men fulfilled these orders most savagely, by one account going as far as to scalp the eldest son of the Sieur Jacques d'Entremont (Crowell 1923: 408).

Over the next six years most Acadians were deported, though some found refuge in remote areas, sometimes with their Mi'kmaq allies (Reid 1990:47). Despite Governor Lawrence's promise of safety from attack by French and the Mi'kmaq, and despite the shortage of inexpensive, productive land in New England, potential settlers (or 'planters') from the New England colonies were wary of the invitation to 'set down' on the developed lands of the expelled Acadians. Benjamin Franklin had warned that the British were planning to institute a less representative and therefore less troublesome form of government in Nova Scotia (Stewart and Rawlyk 1972: 7). Governor Lawrence convened an elected House of Assembly in 1759, assuring potential immigrants that the Nova Scotia government would be similar to that of Massachusetts. Over the next 10 years about 2,400 'New England Planter' families settled in the colony (Gwyn 1990: 60). They discovered only later that there was no constitutional charter to limit the powers of the appointed executive branch, and that the new House could really act only in an advisory capacity (Stewart and Rawlyk 1972: 5). There is also no doubt that the Mi'kmaq people presented a very real threat to the immigrants and their British hosts at this time. United with the Acadians through trade, by marriage and in many cases by the Roman Catholic religion, the aboriginal Mi'kmaq stood to lose everything under the new regime. They would not hesitate to make life difficult for the new settlers (McCreath and Leefe 1982: 250). In order to allay the fears of potential settlers the British sought to placate the natives with diplomacy. The treaty of 1760 guaranteed the Mi'kmaq, Maliseet and Passamquoddy peoples the perpetual right to pursue their traditional livelihood of hunting, gathering, fishing and trading with non-natives for "the necessaries"¹. In the 1999 Marshall Decision, the Supreme Court of Canada found that members of these aboriginal nations retain this right. This finding has challenged current regulations limiting entry into the lobster fishery, and its implications are yet to be fully determined.

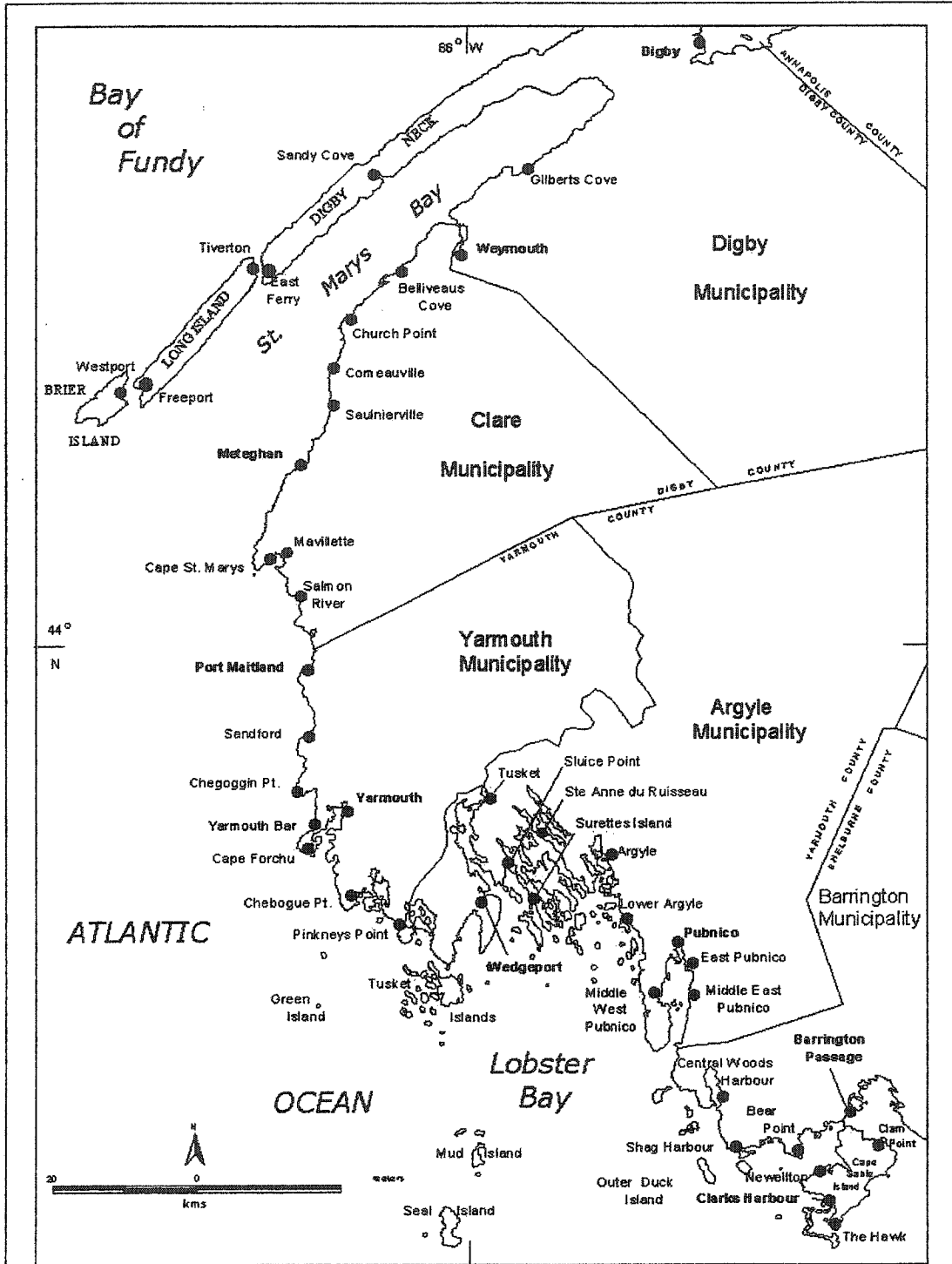
¹ According to the Supreme Court of Canada, "the necessaries" may be understood as the European trading commodities upon which aboriginal people had come to rely (Canada. Supreme Court of Canada 1999a).

The Seven Settlement Areas

The boundaries of the seven settlement areas can be located using Map 4. Starting at the southeast corner of the map in Shelburne County, the Barrington area extends from Barrington Passage, includes Cape Sable Island, and ends at the Yarmouth County line just north of Woods Harbour. The Pubnico area begins at the Yarmouth County line and includes all of the Pubnicos and the West Pubnico peninsula. The English-speaking Greater Argyle area starts at Lower Argyle and ends at Tusket, but it does not include the many peninsulas and islands lying to the south in Lobster Bay. These peninsulas and islands are part of the French-speaking Wedgeport-Ste. Anne du Ruisseau area, which extends west from Ste. Anne du Ruisseau to the Yarmouth municipal boundary near Pinkney's Point. The Yarmouth settlement area starts near Chebogue Point and ends at the Digby County line beyond Port Maitland. The Clare settlement area is contained within the Clare Municipality to the north, and the Digby area includes the remainder of Digby County, including Digby Neck and the Islands.

The Municipality of Barrington

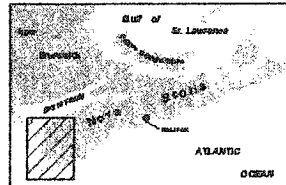
Starting from the south, the first distinct settlement area stretches from Barrington Passage to the southern boundary of Shelburne County near Upper Woods Harbour. The soil is poor on this southernmost tip of Atlantic Canada, but for centuries, its sheltered harbours have made the area a popular haven for seafarers of all kinds. It is close to some of Nova Scotia's major offshore fishing banks, as well as to the New England markets. Historically, a rich inshore fishery for flatfish, estuarial species, mollusks and lobsters has surrounded it. Once the headquarters of the French colonizer Charles de la Tour and the summer fishing station for many Pubnico residents, the area was supposed to have been cleared of its francophone population in 1756. However, when the first New Englanders arrived here to inspect a proffered land grant, they were put to flight by an armed contingent of one hundred Mi'kmaq and Acadians who had eluded deportation. Fishing families from Cape Cod and Nantucket finally resettled the area around Barrington Passage and Cape Sable Island during 1761-62 (Crowell 1923: 98). The American Revolution was a difficult time for these people, whose sympathies seem to have been



Map 4: Southwest Nova Scotia

Data Sources: Province of Nova Scotia;
GEBCO (1989-NERC/UK); ESRI, Ltd (1999)

Produced by Small, Dalhousie University Utilizes
Map and Geospatial Information Collection (2001)



more with their relatives and former countrymen to the south. When the British resettled a large population of Loyalists, including a contingent of former slaves, in the area north of Barrington to be known as Shelburne, the Barrington residents were not pleased. As Edwin Crowell (1923: 207) attested in 1923, this "...called for an adjustment of differences of people with decidedly extreme political convictions, which have hardly been obliterated in the four generations since that time." Nevertheless, a few Loyalists did settle in the outskirts of Barrington Township, as that settlement grew northward toward Shag Harbour in the late 1700s (Richardson 1960: 10). The northernmost villages of Woods Harbour, Forbes Point and Pubnico Beach were "...laid out by the Government for Veterans of the British Army and Navy" (Crowell 1923: 218). Until the beginning of the nineteenth century, the residents of what has become the Municipality of Barrington relied chiefly on the fishery. By the mid 1800s they had branched out into coastal and international shipping enterprises, carrying, for instance, plaster gypsum from Windsor to New York, and lumber from New Brunswick to Newfoundland. Attempts to enter the banks fishery on a corporate scale (emulating Lunenburg) were apparently unsuccessful (Crowell 1923: 336), but there was certainly a thriving owner-operated banking schooner fishery (Richardson 1960:18). As they built larger vessels, residents began to trade with the West Indies and other distant ports. According to Crowell (1923: 334), Barrington had a population of about 2200 in 1834, and boasted a brig and sixty-seven schooners, for a total of 2581 tons displacement. In 1861, there were 5380 people, 1450 stores and outbuildings, twenty-four schools and eighteen churches. The fleet had declined to sixty vessels, but these were much larger ships, with a total tonnage of 4125. Toward the end of the nineteenth century, the lobster fishery became very important, and many small canneries dotted the shoreline (Found 1912:50, Richardson 1960: 26). Ephriam Atkinson of Clark's Harbour on Cape Sable Island, Barrington's only chartered town, designed and built the first Cape Island boat in 1907. This small, versatile motorized fishing vessel is still the design of choice in Nova Scotia's small boat fishery. The contemporary Crowell (1923: 335) lamented the demise of a traditional way of life: "...the village is awakened by the motors of fishing craft speeding seaward, steamers and refrigerator cars are scheduled to connect with the arriving steam trawler, combines exploit consumers, fishermen and the government and maintain their "spread" both summer and winter."

Today, the Municipality of Barrington has the smallest population of the five regional municipalities that comprise Southwest Nova Scotia, though its population has increased by fifty percent since the beginning of the twentieth century. Its fishermen land the largest volume of lobster, and the total landed value of all of its fisheries is the highest in the region. The municipality also accommodates at least a dozen boat yards and about forty fish buying establishments, many of which purchase lobsters and other species from all over Nova Scotia. Clearwater Lobsters constructed the first of its two state-of-the-art 'dry land' lobster storage facilities at The Hawk on Cape Sable Island. The median household income in the Barrington Municipality is relatively high for the region, but there are many small and dilapidated homes in the area, particularly on Cape Sable Island. Scores of modern, well-maintained vessels are tied up at several major wharves, including the big concrete wharf at Clark's Harbour, but there are also many smaller wharves around the island, wooden ones in poor shape, sheltering smaller, shabbier boats. Cape Sable Island is attached to the village of Barrington Passage on the mainland by a short causeway. In recent years a modern, suburban-style shopping district has sprawled out from this nexus. To the west of the causeway on the mainland lie the important lobster ports of Bear Harbour, Shag Harbour and Woods Harbour, where a number of the major buyers receive lobsters from all over the province for shipment to the U.S. and overseas.

Introduction to the Municipality of the District of Argyle

The Municipality of the District of Argyle has the most complex settlement pattern of the five municipalities that make up the research area. While each of the other four municipalities have relatively homogeneous populations and cultures, Argyle contains two distinct Acadian communities: the Pubnicos; and Wedgeport-Ste. Anne du Ruisseau. These communities are separated from each other by an English-speaking area, what I shall call 'Greater Argyle', although it also includes the village of Tusket. This presents problems for statistical analysis, since demographic data are only collected at the municipal level.

A scattering of Acadians populated the coastal fringe from the Pubnicos to the Tusket River before the deportations, and many of them returned to that area after about a decade of exile in Massachusetts. Most of what became the village of Argyle was first resettled by anglophones from New Hampshire and Maine, but a large piece of land at the northern end was granted to a retired Scottish soldier. He, in turn, leased considerable acreage to a group of local Acadian families who had avoided deportation by hiding in the nearby forests (Ricker 1941). Thus began a third settlement, centred at Ste. Anne du Ruisseau, and eventually spreading out on the land and islands southeast of the Tusket River mouth (Boucher 1980). Four Acadian families who had returned from Boston established a fourth settlement, now called Wedgeport, on the opposite side of the river mouth in 1767 (Campbell 1876: 74). Finally, around 1785, a group of twenty-five Loyalist families and their slaves arrived from New York to settle the village of Tusket proper, a relatively fertile area farmed earlier by Acadians (Campbell 1876: 87 ff.). The net effect of this settlement pattern was to put the English-speaking population at the more fertile heads of the bays and river mouths, while the Acadians occupied the rocky peninsulas and islands.

The Pubnicos

According to McCreath and Leefe (1982: 52), Charles de la Tour has surely earned the right to be called the first genuine Acadian. Arriving at Port Royal with his father in 1610 as a fourteen-year-old, he remained in Acadia almost continuously for the rest of his life. When the British destroyed the Habitation at Port Royal in 1613, he and several other young men took to the forests. They lived with the Mi'kmaq, from whom they learned survival skills and the indigenous language. A resourceful opportunist, la Tour managed to remain in nominal control of the territory from Cape Sable to Cape Forchu from 1623 until his death on Cape Sable Island in 1663. In order to do this, he was obliged to swear loyalty at various times to French, British and Scottish monarchs, as well as to Oliver Cromwell, and he passed between Catholicism and Protestantism as necessary. He was assisted in his efforts by a succession of capable and well-situated wives (Mahaffie 1995: 50–91). In 1651, la Tour found it necessary to travel to France to reestablish his authority. At this time he brought back several French families willing to settle in Acadia, including Madeleine and Philippe Muis d'Entremont (Ross and Deveau

1992: 19). The feudally-oriented French monarchy had authorized la Tour to create seigneuries, and so he declared d'Entremont the Baron of Pubnico, making him Acadia's first and only feudal lord (Mahaffie 1995: 119).

Today the Pubnico district begins at the southern boundary of Yarmouth County and ends just below Lower Argyle. The East Pubnicos are situated on the eastern shore of Pubnico Harbour, a narrow bay extending about ten kilometres inland. The West Pubnicos are on the narrow peninsula jutting into Lobster Bay that forms the opposite shore of Pubnico Harbour. In his survey of 1699, Villebon visited the homestead of one of Baron d'Entremont's sons. He described a well-developed mixed farming operation complete with a water-powered gristmill. According to Villebon, "The soil along this river is fertile, and there is good fishing within sight of land" (c.f. Webster 1934:134).

D'Entremont's two elder sons married the daughters of la Tour. His third son "...married into the Micmac nation" (Ross and Deveau 1992:20) and took the original family name of Muis. The senior d'Entremont's eldest daughter married Pierre Melanson, founder of the Grand Pré settlement.

Before their exile, many Pubnico Acadians spent their summers fishing at Barrington Passage. There, Major Prebble captured and deported seventy-two Pubnico residents, men, women and children, in the summer of 1756. The settlement of Pubnico itself remained intact until September 1858, when Major Roger Morris razed it under the order of Colonel Monckton. The remaining inhabitants escaped, but were later captured, incarcerated at Halifax, and finally deported to Cherbourg, France two years later (Ross and Deveau 1992: 78). As Ross and Deveau have remarked, the Acadians of Pubnico were among the last to be deported, and among the first to return. In 1767, eighteen exiled 'Acadian' families returned from Boston and applied for permission to resettle. Several of them were not French by name. It appears that a number of Irish Catholics living in the same area had also been deported. When their request was granted in 1771, the d'Entremonts and Duons (today the d'Eons) settled in West Pubnico, an area previously undeveloped, while the Amiraults, Belliveaus and others settled on the east side of the harbour. English-speaking settlers had already resettled the head of Pubnico

Harbour, where the original Acadian settlement had been (Campbell 1876: 70-2; Ross and Deveau 1992: 79). Life was made difficult for the Acadians by British restrictions on the practice of Roman Catholicism. There was not a resident priest in Southwest Nova Scotia until Father Jean-Mandé Sigogne arrived in 1799, and he established himself at Church Point in Clare. There was no church in West Pubnico until 1815. This also meant that there were no formal schools, traditionally conducted by clergy in Roman Catholic communities of the day. As a result, and unlike their Yankee neighbours, many of the early Acadians were illiterate. For this reason, the earliest written accounts of life in the Pubnicos were composed by non-residents (Ross and Deveau 1992: 84). In 1876, the Rev. J. R. Campbell reported “numerous and comfortable Acadian homesteads” with well-cultivated fields located on either side of the harbour near the many available sheltered fishing coves (Campbell 1876: 74).

Today most of Pubnico’s residents live in West Pubnico on the western peninsula, an area with an unusually vigorous and diversified economy. There are large, modern wharves and fish plants, several boat builders’ yards, a commercial bank and a credit union, and a large Co-op supermarket. There are a number of recently constructed and expensive-looking homes, but even the older, more modest homes are well taken care of and surrounded by manicured lawns. Residents say that more fish are landed on Dennis Wharf in Lower West Pubnico than on any other wharf in eastern Canada. Members of the West Pubnico community are particularly proud of their Acadian heritage, and they maintain a local museum with extensive archives. Many residents can trace their ancestry back to the original settlers. Some participate in annual historical pageants, and others have become involved in historical and archaeological research in their spare time. East Pubnico across the bay is more sparsely populated and has less visible civil infrastructure, though like West Pubnico, it boasts a large Catholic church. Like West Pubnico, East Pubnico harbours a small groundfish dragger fleet. There are several large fish plants with their own wharves, a big outdoor lobster pound, a regional herring processing plant and an aquaculture facility for growing sea plants. East Pubnico also has one of the region's larger shipyards. The residents here are more likely to speak English with each other, and do not seem quite as strongly attached to the Acadian legacy of the Pubnicos.

Greater Argyle

The Jeremiah Frost family, the first New England settlers of Argyle, arrived in 1760, a year before settlement of Yarmouth began (Ricker 1941:10). The Frosts were from Kittery, Maine, and they settled on a vacated Acadian farm site along the Abuptic River. They were joined shortly thereafter by Frost's three brothers and their families and about a dozen other households, most from the Kittery area (Campbell 1876: 47). These first settlers would not obtain legal title to the lands that they occupied and developed for another ten years. A retired Scottish soldier obtained the earliest land grant in the area and named it 'Argyle' after his birthplace. Lt. Col. Ranald McKinnon culminated his military career by assisting with the expulsion of the Acadians. He retired to settle in the area around 1762. He was rewarded for his services in 1766 with a grant of 2000 acres (Campbell 1876: 47). Land grants were subject to forfeit if they were not settled and developed. Rather than import colonists at some expense and risk, McKinnon leased 230 acres to five Acadian families who had eluded deportation. He later conveyed ownership (apparently at no cost) of 250 acres to one Joseph Moulaison, who seems to have occupied that land before the deportations (Ricker 1941: 7). McKinnon himself used African slaves as labourers on his farm (Ricker 1941: 125). When the local militia was mustered in response to the mounting revolutionary unrest in New England, the peculiar allegiances within this cultural mix of settlers came to the surface. Acadian militiamen, and principally Benoni d'Entremont, complained that their Yankee-born commanders were pressuring them to support the revolutionary cause (Campbell 1876: 68-9). The Nova Scotia Governor responded by replacing the incumbent militia captain, Jeremiah Frost, with the staunch Loyalist soldier Ranald McKinnon (Ricker 1941: 69). Like their Barrington compatriots, the Argyle Yankees remained sympathetic to the American revolutionary cause, despite the fact that some of their vessels fell prey to Yankee privateers during this period. In 1785, a number of displaced Loyalists from New York were granted large agricultural tracts along the Tusket River. Jackson Ricker (1941: 96-97) has remarked on the aristocratic backgrounds and airs of superiority imported by many of the Loyalists, the preferential treatment they received from the Crown, and the contempt in which they were held by their Puritan-democrat neighbours in Argyle.

Ricker (1941) has given a detailed account of the development of Argyle, nearby Glenwood, and Tusket over the next century. Roads connected Argyle with Yarmouth and Shelburne, the Abuptic River was bridged and the usual infrastructure of mills, stores and inns evolved. Farming was never as important as in neighbouring Yarmouth, but the Yankee settlers, like their Acadian predecessors, built and maintained communal dikes to extend agricultural land. But Argyle's economy centred on the sea. The nearby forests provided materials to support several small shipyards in Central and Lower Argyle. Some residents fished from their own fore-and-aft topsail schooners as far up as the Labrador, but many others found employment as captains and crew in the New England fishery. Ricker (1941: 125) remarks that during the period from 1865 to 1885, at least sixty large homes were built, the more luxurious of these by the masters of vessels. As shipbuilding declined in the 1870s, "...all the young and middle aged Argyle men were fishing in American vessels" (Ricker 1941: 52). During the 1930s, U.S. immigration restrictions forced many Argyle fishermen to seek employment on schooners out of Lockeport, Nova Scotia. John Shand of Woods Harbour opened the first lobster cannery in Lower Argyle around 1870. Though live lobsters fetched only a half a cent a pound at that time, Ricker (1941: 51) reports that some fishermen were making \$500 in a season. Live lobsters were first shipped to Boston from Argyle via Yarmouth in 1878. Writing in 1941, Ricker (1941: 53) says that for many years, the lobster fishery had been an extremely important part of the local economy, but at the time of his writing was less profitable, and restricted to the residents of Lower Argyle.

Today, the local lobster fishery is still centred at Camp Cove Wharf near Lower Argyle, and it is booming. Nearly all the lobstermen here are members of the Argyle Co-op, the most successful lobster fishermen's co-op in the region. Nearby is Wade's Wire Traps, a very successful manufacturer of the new-style wire lobster pots. Otherwise, the communities of Argyle, Glenwood and Tusket are some of the quietest and least commercially developed in the region. This is a very beautiful area, reminiscent of rural New England with its hardwood trees, meandering rivers, stone walls and gently decaying barns.

Wedgeport – Ste. Anne du Ruisseau

As discussed earlier, this area grew from two Acadian resettlements. The first was of a group of Acadians who had avoided deportation. They obtained leases from Ranald McKinnon for land near Eel Brook, later to become the village of Ste. Anne du Ruisseau. McKinnon also granted Joseph Moulaison and his associates 250 acres of property at nearby Amirault's Hill (Campbell 1876: 73). The second settlement group, headed by Eustace Corporon, was of Acadians who had been deported to Boston. In 1758, the exiled Corporon agreed to pilot a British naval vessel searching for Acadians suspected of hiding along the Tusket and Argyle Rivers. Coming upon some sheep on the bank, Corporon's patrol vessel stopped to investigate. The vessel was ambushed, apparently by Mi'kmaq, and eight British sailors were killed. Corporon fled with the attackers, and disappeared for nine years. He resurfaced in 1767 to found the settlement now called Wedgeport with three other returned exiles (Campbell 1896: 74). This was the same year that the first group of Acadians had obtained their leases from McKinnon, and probably not coincidentally the year that the conciliatory Lt. Governor Michael Francklin took office. According to the late Father Clarence d'Entremont of Pubnico, the 3000-acre Wedgeport peninsula had been granted to Capt. Ebenezer Moulton, the Baptist minister of Yarmouth, on September 27, 1772. He sold 1500 acres of this land to Messrs. Corporon, Amirault and LeBlanc seven months later, but this sale was not registered until 1780 (d'Entremont 1981: 58).

In principle, Michael Francklin served under the Nova Scotia Governor, Lord William Campbell. In fact Campbell spent most of his term in the Carolinas, leaving Francklin in charge (McCreath and Leefe 1982: 260). Francklin is celebrated by many Acadians as the man who invited and even welcomed them back to Nova Scotia with a promise of eighty acres per family and free exercise of religion (McCreath and Leefe 1982: 261). Whatever else may be said, Francklin, who had attained his wealth and social stature by plying the rum trade, was a thorough pragmatist. He was certainly aware that the inclusion of Acadians and Mi'kmaq, with their skills, local knowledge and commitment to the land, would contribute to the improvement of the colonial economy. The case of

Abbé Bailly illustrates the political, cultural and economic exigencies of the time. Britain had gained legal control over Canada by treaty in 1763, and in 1768 the Canadian Governor Carleton sent Abbé Charles Francis Bailly de Messin from Quebec to serve as a missionary to the Acadians and the Mi'kmaq. This was done at least partly because the British feared that these resident Catholics would otherwise be influenced by priests allied with the French, or by the rebellious colonists of Maine (Brebner 1937: 194). Francklin placed Bailly "under the care" of Rev. John Breynton, long-time Rector of St. Paul's Anglican Church in Halifax, chaplain to the House of Assembly, and *confidante* of governors past and present (Boucher 1980: 20-1). The two pastors seem to have become friends. Breynton was having financial difficulties at the time, and had petitioned the government for assistance in 1765 (Boucher 1980 :22). Shortly thereafter, he was granted about 2000 acres of land in what was to become the Ste. Anne du Ruisseau parish, with the usual stipulation that it be settled and developed. Ranald McKinnon had been granted his land in that area at approximately the same time. Unlike McKinnon, however, Breynton did not take up residence there, and for several years he was unable to develop his grant. In the course of his missionary activities, Abbé Bailly also located reliable Acadians willing to lease and improve Breynton's property, a valuable courtesy since New England immigrants of the period were only willing to settle on land granted to them outright. The newly accommodated Acadians later rewarded the British cause with their loyalty during the American Revolution.

Abbé Bailly returned to Quebec around 1774, and the Acadians of Southwest Nova Scotia did not have the services of a permanent priest until 1799. Father Jean-Mandé Sigogne was ordained in France, just two years before the French Revolution. Sigogne opposed the new secular French state, and so moved to England where he mastered the language and made his way for a time as an apprentice factory worker. When the bishop of Quebec offered him the Acadian mission, Father Sigogne willingly accepted. He arrived in Halifax in June 1799, spending several days as the guest of the incumbent Governor Wentworth (Boucher 1980: 27). By all accounts, Father Sigogne was quite strict and conservative in his outlook, but there is no doubt that he was singularly committed to the spiritual and material wellbeing of his scattered flock. Ministering to

political, educational and spiritual needs, he "...played a major role in the advancement of the Acadians in southwest Nova Scotia" (Ross and Deveau 1992: 83). He began his mission at Ste. Anne du Ruisseau, where there was a small chapel. He lived there for a short time, a move that settled a long-standing controversy between Ste. Anne du Ruisseau and the Pubnicos over where the parish church should be located. Sigogne soon moved to Church Point in Clare where he established a second parish and his own headquarters for the next forty-five years (Boucher 1980: 27). The new parish church was erected in Ste. Anne du Ruisseau in 1808. Parishioners constructed churches in Pubnico in 1815, and in Tusket Wedge (now Wedgeport) in 1822 (Boudreau 1980:11).

The Ste. Anne du Ruisseau community expanded onto the southeastern side of the Tusket River estuary in 1801, when twenty-seven Acadian families were granted about 5000 acres, including Surette's, Morris, and Robert's Islands (Boucher 1980: 32). The early settlers on the southeastern side of the estuary seem to have been more involved in farming than fishing, though they practiced both. The economic centre of this Acadian settlement area developed at Tusket Wedge on the opposite shore. There, in about 1845, Cyrille Pothier founded an international trading company that expanded rapidly, and prospered for sixty years. Pothier and his sons and successors built a fleet of fishing vessels. They processed salt fish and shipped it in their own barques and brigantines to the United States and the Caribbean. The vessels returned with salt, sugar, molasses and rum. The 'Pothier's Wharf' complex included a cooperage and a store which sold imported merchandise and fishing gear (Boudreau 1980: 21-23). The many Pothier enterprises faded in the early twentieth century, though at least one of the Pothiers was running rum to Long Island during the Prohibition era (Boudreau 1980: 21-23). Tusket Wedge blossomed as a major lumber milling and export centre between the years 1888 and 1912. Woodsmen cut timber inland and floated it down the Tusket River to a steam powered sawmill. The finished product could be shipped out of the nearby harbour. Local shipyards had used much of this lumber earlier in the nineteenth century, but now most of it was exported. Toward the end of the nineteenth century one lumber company employed about 500 people (Boudreau 1980: 21-23).

The Wedgeport-Ste. Anne du Ruisseau economy was tied to international trade, and it suffered during the period of international depression that began in the 1870s (Boucher 1980: 64). In addition, the Treaty of Washington of 1871 permitted American vessels to fish the inshore waters of Nova Scotia. These larger vessels were able to supply the U. S. market directly, and put many local fishing enterprises out of business (Boucher 1980: 65). According to Boucher, many former Acadian captains were now forced to crew for the wealthier English-speaking captains of Argyle who owned larger boats. Others crewed and sometimes skippered American fishing vessels. Many of the latter emigrated to Massachusetts in the early twentieth century, since their work along the New England coast was keeping them away from their families for periods of up to six months (Boucher 1980: 66).

The lobster fishery became a mainstay of the local economy in the late 1800s. Until recently, many fishermen spent the lobster season living in communal shanties on the Tusket Islands offshore, coming home briefly on weekends. Entrepreneurs set up small canneries on many of the islands in the early years. Motorized fishing vessels were late in coming to the Wedgeport area. Fishermen continued to use dories rigged with small sails until the late 1920s. In later years, tug sailboats pulled strings of these dories out to the fishing grounds (Delbert Pothier 1980: 91). A group of fishermen built a lobster cannery on the mainland near Wedgeport in the late 1920s, but taking of the smaller 'canner' lobsters was prohibited shortly thereafter. The cannery was soon converted to serve a new and booming tuna fishery. Between about 1934 and 1954 Wedgeport was renowned for its sport tuna fishing. The Wedgeport Sport Tuna Fishing Museum displays mementos and photos recording visits of such American luminaries as Franklin Roosevelt, Bernard Baruch, Gene Tunney and Kate Smith (Israel Pothier 1980: 16). The tuna fishery collapsed in 1955. Many local people believe the collapse was caused by the construction of the causeway to Sable Island at Barrington Passage. The causeway diverted the annual migration route of schools of herring that had apparently drawn so many tuna into Lobster Bay (Israel Pothier 1980: 16).

Civic pride in Tusket Wedge was at its peak in 1910, when residents successfully petitioned the Nova Scotia government for the legal status of 'town'. Under the new name of Wedgeport, it was the only Acadian community in Nova Scotia ever to so incorporate. This new status carried the responsibility of raising taxes to maintain schools, roads and public offices, and unfortunately both the economy and the population went into serious decline after the First World War (d'Entremont 1981: 70). After struggling for many years, Wedgeport relinquished its civic status in 1947, reuniting with the Argyle municipality.

The lobster fisheries of Wedgeport continue to prosper. Other parts of this Acadian settlement area are losing permanent residents, although there is evidence of new summer home construction along the coastline. Many residents commute to work in the town of Yarmouth. Fishermen here have traditionally supplemented their income by gathering two types of seaweed. Irish moss has food and pharmaceutical uses, and rockweed is used in fertilizer. Unfortunately, the more valuable Irish moss has almost disappeared from the area, probably due to over-harvesting.

As in Pubnico, the residents of the Wedgeport-Ste. Anne du Ruisseau area continue to support Acadian institutions and cultural events. There are several small museums and an annual Acadian festival. But unlike Pubnico, the economy has not significantly diversified and the population is declining.

The Municipality of the District of Yarmouth

The population of the Yarmouth Municipality is concentrated around Yarmouth Town. With a population of over 7000, Yarmouth Town is Southwest Nova Scotia's largest commercial and service centre. The remainder of the Municipality consists of small farming and fishing villages, where most of the lobster fishing takes place.

The only recorded Acadian settlement of the Yarmouth area was in 1739, well after the British takeover of Nova Scotia. The British permitted a group of eight Acadian families to settle in the Chebogue area on the condition that they did not build any dikes or claim

any land (Campbell 1876: 15). Campbell believed that the recorded terms of this settlement imply the existence of previous Acadian settlements in the Chebogue area. Campbell also believed there had been an Acadian settlement in Chegoggin, but this was only on the basis of hearsay and the existence of some old stone foundations in the area (Campbell 1876: 21). The first English-speaking person to spend time in the Yarmouth area was Ephriam Cook, a Massachusetts farmer who decided to become a fisherman after losing one of his legs in a farming accident. During the 1750s, Cook worked seasonally on New England vessels exploiting the Nova Scotia fishing grounds nearby. The New Englanders 'made' or dried their cod on the Yarmouth shore (Sweeney 1993: 10). In the spring of 1761, Cook began establishing a permanent fishing station on the Chebogue River (Campbell 1876: 44). While Cook eventually moved his family to the area, the first permanent settlers began arriving from New England in the summer of 1761. Most of the men were fishermen, and they settled in two areas, Chebogue and Cape Forchu. One of the settlers, Sealed Landers, built a gristmill at the head of what is now Yarmouth Harbour.

The first years were difficult, and many of the early settlers returned to New England (Campbell 1876: 36). But the land was free, and most of the settlers were poor, so the population did grow to 246 by 1764, the majority living in Chebogue (Campbell 1876: 50). Settlement was hindered by the fact that most of the Township of Yarmouth had been granted years earlier to hundreds of applicants in the New England colonies. But these earlier applicants had by now legally forfeited their claims by not taking possession, and the Nova Scotia Council of Government therefore appointed what evolved into a local committee to regulate the admission of settlers and the granting of new deeds (Campbell 1876: 42). Perhaps this early, if minor, devolution of power may have endowed the new residents of Yarmouth Town with some sense of civic identity, but Yarmouth seems to have developed slowly and remained a poor region through the American Revolution (with which many residents sympathized). Residents laid foundations for the first church, located in Chebogue, in 1766, but they could not afford to complete it until 1773 (Campbell 1876: 64). In October 1781, the American Reverend Henry Alline paid the first of three visits to Yarmouth. A leader of the 'New Lights'

fundamentalist revival movement, his powerful arguments caused the many New England Congregationalists living in Nova Scotia to question what Alline described as the secularization of their church. Leaders of the Congregational churches of the time were heavily involved in the political issues that led to the American Revolution. While Alline himself did not represent an organized sect, his ideas resonated most closely with the Baptists, and the Baptist denomination became and remains the largest Protestant congregation in Southwest Nova Scotia. Alline and the Baptists are sometimes credited with neutralizing Nova Scotian sympathy for American struggle for independence (Stewart and Rawlyk 1972).

By 1810, the social and economic centre of the Yarmouth settlement area had shifted from Chebogue to Yarmouth harbour, where it remains today (Campbell 1876: 126). Most of Yarmouth's early settlers were fishermen and their families. They kept subsistence farms when possible, and a few traded furs. The Loyalists who began drifting into the area toward the end of the eighteenth century, changed and invigorated the local economy (MacKinnon 1986: 175). The Loyalists were not simple fishermen-farmers. Many of them had been community leaders, professionals, and industrialists before the American Revolution, and they were well prepared to develop the untapped potentials of their new home. The shallow and narrow Yarmouth harbour itself was not ideal, but its location was a perfect hub for trade between Europe, the United States and the Caribbean. The forests provided the necessities for shipbuilding, and the local population became skilled in constructing, maintaining and sailing ships. The plentiful stands of timber also provided the first important export. Between the turn of the eighteenth century and 1850, the Yarmouth fleet grew from twenty-six vessels and 554 tons to 113 vessels and 17,890 tons. By 1876, there were 254 vessels totaling 131,723 tons (Campbell 1876: 136-7). Due in no small measure to the diverse capabilities of the Loyalists, Yarmouth grew by the late 1800s into a centre of marine insurance, banking and brokering, and of shipbuilding and associated manufacturing industries (Campbell 1876: 136-7).

The fortunes of Yarmouth Town were tied to the wooden sailing vessel, but by the end of the nineteenth century international trade was being carried out almost entirely with iron

steamships. Yarmouth has remained an important regional service centre, with a large hospital, government offices, and the regional airport, but it is no longer a busy international seaport. Its population has barely increased in the last century, and it is now chiefly known as a ferry terminus and a centre of the lobster fishery. Fin fish are still processed in Yarmouth, though some of the smaller villages in the region equal or surpass it in plant capacity. Yarmouth leads the region in herring landings, but less lobster is caught off the coasts of the Yarmouth district than in Lobster Bay to the south. Even the cargoes of lobsters and fish once shipped out of Yarmouth harbour are now transported by truck or by airfreight from Halifax to New England and more distant markets. Today, strip malls, auto dealerships, and fast food outlets on the edge of town compete with the genteel mansions and old downtown and waterfront commercial areas of nineteenth century Yarmouth Town. Because Yarmouth is the terminus for two ocean-going ferries arriving daily from Portland and Bar Harbor, Maine during the summer months, the town experiences a high volume of tourist traffic. Most of these tourists are on their way to other parts of the province, but about a third of them spend the night in Yarmouth area lodgings. About 68,500 parties of tourists passed through Yarmouth in 2000, making tourism an important factor in the local economy (Nova Scotia Department of Tourism and Culture 2002).

There are a number of small farming and fishing villages beyond the Yarmouth Town limits. The largest is Port Maitland, with a dragger fleet as well as lobster boats, and a main street lined with Victorian homes. Some of the smaller fishing ports such as Pembroke, Chegoggin and Sandford are situated well off the traveled highways. These villages are classically picturesque, with their small wooden wharves set in surrounding pastures and cultivated land. Pinkney's Point, a rocky cape jutting out from hectares of marshlands, has an Acadian population and a prosperous lobster fishery. The Acadia Band community, one of Southwest Nova Scotia's two Mi'kmaq First Nations reserves, is located just south of the Yarmouth Town limits.

The Municipality of Clare

The St. Mary's Bay shore line was first explored by Champlain as a possible settlement area in 1604, but de Monts rejected it when he could not find an easily fortified site (Mahaffie 1995: 25). Inferior to the Cape Sable area for fishing and the Annapolis Valley for farming, this locale remained unsettled until after the Acadian expulsion in 1755. The first non-native residents were a small group of Acadian fugitives led by Pierre ("Piau") Belliveau, who suffered through the winter of 1755-56 on the shore near modern Belliveau Cove. Many of them died and were buried there that winter (Ross and Deveau 1992: 88). The Clare Municipality was Nova Scotia's only planned Acadian community, and it is the only municipality in the province containing no non-Acadian towns or villages. When the Acadians were permitted to return to Nova Scotia in 1764, most of their former lands had been confiscated. Responding to the petitions of the returning exiles, some of whom had walked over eight hundred miles from points in New England, Lt. Governor Michael Francklin ordered the township of Clare laid out for them in 1768 (Wilson 1900: 31). He offered eighty acres to each head of household with an additional forty acres for each family member (Brebner 1937: 108). The first grant of land ran south from near the present northern boundary of Clare to Little Brook, just south of Church Point. Within ten years, Clare's thirty founding families were well established in this area (Ross and Deveau 1992: 90). After 1785, the sons of these families were granted land on the adjacent coastline to the south, which now contains the villages of Comeauville, Saulnierville and Meteghan. A third grant or 'concession', from Mavillette to Salmon River, was made to later descendants of these families between 1804 and 1805 (Ross and Deveau 1992: 90). The individual parcels of land in Clare were made long and narrow, allowing each household a bit of shoreline for fishing, marshland to dike for hay, a forested back lot for timber, and a home site on the main road. This scheme placed homes close together on a single highway stretching from one end of Clare to the other, a distinctive geographic feature of the municipality that still persists.²

² Long, narrow landholdings, which allow dwellings to be situated closely on a main road, are a French Canadian tradition, as is evidenced in the landholding patterns of Quebec's agricultural regions.

By the beginning of the nineteenth century, when the Abbé Sigogne decided remove his headquarters from Ste. Anne du Ruisseau to Church Point, there were over a thousand Acadians living in Clare (Ross and Deveau 1992: 92). At the time there were only four hundred living in the Pubnico and Wedgeport - Ste. Anne du Ruisseau communities combined (Clark 1968: 367). Father Sigogne remained in Church Point until his death in 1844, and had a profound effect on the temporal as well as the spiritual development of Clare, especially after his appointment as Justice of the Peace in 1810 (Ross and Deveau 1992: 92). He became fluent in the Mi'kmaq language and served as pastor and spokesperson for the aboriginal population as well. He helped secure land for the Mi'kmaq reserve at Bear River, where he also established a church and a school.

The Acadians of Clare took advantage of all the resources their new homeland had to offer. The finest resource was the vast forest behind them, and for over a century forest products were the backbone of the economy (Ross and Deveau 1992: 94). Shipyards sprang up along the shore, and a lucrative shipping trade to the West Indies and New England was underway before 1800. As marshes were diked and farms developed, agricultural products joined lumber and salt fish as the export commodities traded for manufactured goods. By the early 1900s the residents of Clare were beginning to exhaust forestry resources, and it was only at this point that many turned seriously to the fisheries as a primary source of income (Ross and Deveau 1992: 94). Clare was further than most parts of the region from the best fishing grounds, but motorized fishing vessels and refrigeration made commercial fishing a practical livelihood. Two brothers breathed new life into the Clare fisheries in the 1950s when they founded an offshore scallop dragging and processing enterprise that diversified and grew into Comeau Seafoods, the region's largest employer.

Although catches in the Atlantic Canadian fisheries have declined, the economy of Clare seems relatively healthy. This may be attributed to the volume and diversity of value-added seafood products produced by a total of about twenty locally owned fish processing plants of various sizes, and the flexibility and cooperation between those plants (Giasson 1992). The fish that is processed is not always caught locally, and it is

almost entirely exported by local entrepreneurs who have opened up markets for a variety of products in Europe, the Caribbean and Asia as well as the United States. In addition, Clare has the Southwest region's largest shipyard, which has begun manufacturing large pleasure yachts for the international market, as well as larger working vessels. The Université Ste.-Anne at Church Point is Nova Scotia's only French language university.

Municipality of the District of Digby

The English-speaking Municipality of the District of Digby occupies the northern and peninsular part of Digby County. The population is concentrated in the environs of Digby Town along the southwestern shore of the Annapolis Basin, but a significant part of the fishery and almost all lobstering is conducted from Digby Neck and the adjacent Brier and Long Islands. This is a partially submerged peninsular extension of the North Mountain ridge that bounds the Annapolis Valley. Broken at two points by the Petit and Grand Passages, it defines the western reach of St. Mary's Bay as it extends more than fifty kilometres into the Bay of Fundy. Brier Island, at its tip, is the point in Nova Scotia closest to Maine. The first permanent non-aboriginal residents of Digby County came from Maine to this little island.

Champlain explored and described Digby Neck and the passages between the islands in 1604. Almost a century later the French governor Villebon suggested the Grand Passage between Brier and Long Islands as a short cut from Port Royal to the Cape Sable settlements through St. Mary's Bay. He reported that the Passage was a popular cod fishing ground (Webster 1934: 22, 134). There is evidence that it was also a site of a seasonal aboriginal fishery. The first permanent settlers on Brier Island were David Welch and his wife. Welch had found shelter on the island with a party of Maine fishermen during a storm in 1759 (Shea 1990: 20). Observing great schools of cod quite near to the island's shores, Welch decided to return the next year with his wife to set up a permanent fishing station. Welch came from York, near Kittery, Maine's first English settlement, about a hundred kilometres north of Boston. He chose an opportune time to move to Nova Scotia, shortly after the expulsion of the Acadians and the capture of Louisbourg, the last French Maritimes stronghold, by British and New England troops.

There would have been little competition for Brier Island's cod stocks at that moment. Another family from Maine soon joined the Welches on Brier Island. Over the next twenty years, a scattering of immigrants, mostly from New England, began settling on Long Island, Digby Neck, and other coastal areas of what now comprises the Digby Municipality (Wilson 1900: 34 ff.). While settlers from New England were quickly repossessing the fertile farmlands left by the Acadians in the Annapolis Valley to the northeast, only a trickle of immigrants was attracted to this previously unoccupied territory. The scene changed abruptly in 1783, when nearly thirty thousand Loyalists boarded the last British evacuation ships in New York harbour, bound for what are now the Maritime Provinces (Bull 1978: 15). Several thousand of these people decided to make their new home in the Digby area. While the earlier settlers appear to have been content eking out an existence on the edge of civilization, the Loyalists were determined to transplant civil society into their new environment as quickly as possible. They brought with them many skills and trades, as well as capital, tools, and in some cases, entire disassembled buildings, to re-erect (Wilson 1900: 52 ff.).

On Brier Island, the original settlers had been content with fishing and subsistence trading with Maine and New Brunswick. The large contingent of Loyalists who arrived there in 1783 prepared to take advantage of a British order-in-council that forbade trade between the British West Indies and the newly independent United States. They built large sailing vessels and began exporting fish and lumber to the Caribbean, returning with sugar products, much of which were reshipped to Britain. They developed a vigorous coastal trade with New Brunswick and New England (Shea 1990: 28), and established an offshore banks fishery using schooners and dories (Davis 1991: 10). A shipbuilding industry grew in the Town of Digby and spread up and down the shores of St. Mary's Bay and the Annapolis Basin, taking advantage of the abundant forest resources. Many of the vessels were built for merchants located across the Bay of Fundy in Saint John (Wilson 1900: 104). Digby Town merchants began an international trade in locally manufactured wood products. As the demand for large sailing vessels ended toward the end of the nineteenth century, the town became more reliant on the fisheries. Several large local firms conducted a deep-sea schooner fishery, but Digby was best known for

its huge herring fishery, carried out with weirs and nets, first in the Annapolis Basin, and later in St. Mary's Bay. This may have been Nova Scotia's first instance of overfishing. Wilson (1900: 106) noted that herring had almost disappeared from these waters by 1900. Nevertheless, the Digby fishery remained strong well into the twentieth century, perhaps because of the diversity of species available in the Bay of Fundy. As late as 1939, the port of Digby had the third highest landings by weight in Nova Scotia, surpassed only by Lunenburg and Halifax (Bates 1944: 47). This was largely due to the discovery of the Digby scallop beds twenty years earlier. Lobsters were also very important (Nova Scotia, Dept. of Trade and Industry 1949: 67). As in other areas, the introduction of the Cape Island boat changed the structure of the fishery in the Digby area, particularly on the Neck and Islands (Davis 1991: 10-11). Instead of crewing on extended voyages in company-owned schooners and dories, fishermen were able to build and operate their own boats, boats that were fast enough to make the fishing grounds and return in one day.

In recent years, the fisheries of the Municipality of the District of Digby have seen a general decline, and are the least prosperous among the seven settlement areas. There is still a viable lobster fishery on the Neck and Islands, but landings are lower than elsewhere in Lobster Fishing Area 34. The inshore Digby scallop fishery has almost passed out of existence. Digby Neck and Brier and Long Islands once led the Southwest region in groundfish landings by weight and had an important herring fishery, but landings of these species are very low now, and there are many neglected wharves and abandoned fish plants in the district (Davis 1991). Digby Town is the terminus of the Saint John ferry from New Brunswick, and it has been a popular tourist destination for many years. There are several resort hotels, a golf course, and many scenic and natural attractions. The popular Bay of Fundy whale and bird watching cruises from Brier and Long Islands provide off-season work for some fishermen and their vessels. Visitors from outside the province, including some Europeans, have taken advantage of the low real estate prices by purchasing vacation homes in the area. The small Bear River First Nations reserve is located just a few kilometres southeast of Digby Town.

Though the seven settlement areas in Southwest Nova Scotia share similar climatic and geographical conditions, and though their economies all depend on primary industries, the fisheries in particular, each area possesses a distinctive history and culture. Residents rarely migrate from one settlement area to another. If they move at all, it is usually out of the region altogether. Five of the settlements, Barrington, Pubnico, Argyle, Wedgeport, and Clare, are almost entirely dependent on the fisheries, while Yarmouth and Digby are important regional service centres and enjoy a modest tourist industry. Because of the many historical, cultural, and economic differences among the settlement areas, it would be hard to specify a 'typical' Southwest Nova Scotia lobster fishing community.

Southwest Nova Scotia in the Postwar Era: Population and Employment

Over ten percent of Nova Scotia's residents lived in Southwest Nova Scotia a century ago. The population of the province has almost doubled since then, but the population of Southwest Nova Scotia has only increased by about thirteen percent (Table 2.1). The urban centre of Yarmouth and the rapidly developing communities around Barrington Passage have seen the only real increases. In 1996, Southwest Nova Scotia only comprised about six percent of the provincial population. It experienced a slight population decline between 1991 and 1996, while the provincial population continued to grow.

Table 2.1. POPULATION BY CENSUS SUBDIVISION FOR SELECTED YEARS 1901-1996

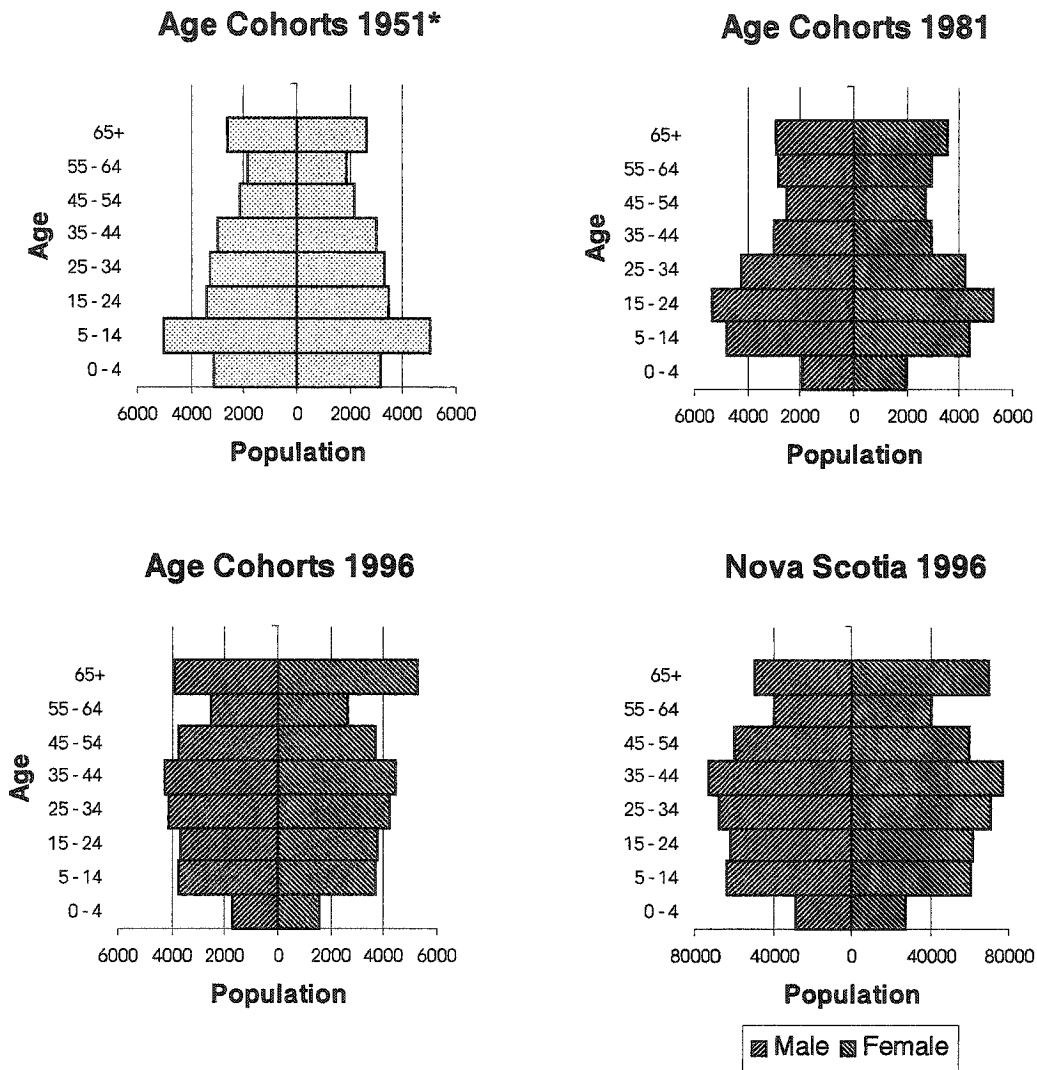
Year	Barrington	Argyle	Yarmouth	Clare	Digby	Total	Nova Scotia
1901	5953	9388	13481 (na)*	8585	11737 (na)*	49144	459574
1951	6573	7812	14982 (11)	8409	11580 (39)	49356	642584
1961	6901	7810	15571 (5)	8539	11637 (40)	50503	737007
1971	8003	8517	16156 (9)	8562	11232 (45)	52512	788960
1981	8740	8950	17320 (25)	9600	12050 (40)	56660	847442
1991	8850	9215	18540 (68)	9654	11541 (55)	57923	899942
1996	8863	8947	18290 (73)	9298	11125 (77)	56523	909282

*Figures in parentheses indicate the population residing in First Nations reserves. These figures were not available for 1901.

Sources: Canada. Fourth Census of Canada 1902; Canada. Dominion Bureau of Statistics 1953, 1962; Canada. Ministry of Trade, Industry and Commerce 1974; Canada. Statistics Canada 1982, 1994, 1999.

The age cohort pyramids (Figure 2.1) show how the age structure of the population has changed in forty-five years. In 1951, children under the age of fifteen were a third of the population in Southwest Nova Scotia. By 1996 this cohort accounted for only nineteen percent, evidence of a declining fertility rate. Figure 2.1 also reveals an aging population.

Figure 2.1. AGE COHORT PYRAMIDS FOR SOUTHWEST NOVA SCOTIA: 1951, 1981 and 1996.



* Separate male and female age data were not reported in the 1951 census. This pyramid was constructed around a central axis in order to allow easier visual comparison with the other three.
 Source: Canada. Dominion Bureau of Statistics 1953; Canada. Statistics Canada 1982, 1999.

The proportion of persons over the age of sixty-five increased from ten percent in 1951 to sixteen percent in 1996. The population of working age (fifteen to sixty-five years of age) also increased during this period, from fifty-seven to sixty-five percent. As Figure 2.1 shows, the age structure in Southwest Nova Scotia was actually quite similar to that of the province of Nova Scotia as a whole in 1996, although only thirteen percent of the provincial population was over sixty-five years of age.

Like most rural Nova Scotians, the people of Southwest Nova Scotia are not highly educated by North American or urban provincial standards. The contrast with the education levels in Halifax City is striking (Table 2.2). Over half of the residents of Southwest Nova Scotia have not earned a high school diploma, and one in five have less than nine years of formal education. About a quarter have completed trade school or other professional training, but very few have graduated from or even attended university. Clare shows the highest level of university attendance in Southwest Nova Scotia, perhaps because Université Ste. Anne, the region's only university (and Nova Scotia's only French language university), is located there.

Table 2.2. HIGHEST LEVEL OF EDUCATION IN 1996 AS A PERCENTAGE OF POPULATION OVER 15 YEARS OF AGE BY CENSUS SUBDIVISION*

Education Level	Barrington	Argyle	Yarmouth	Clare	Digby	Halifax	Nova Scotia
Less than 9 years	22.7	23.3	14.1	23.6	19.1	6.7	11.1
Some high school	38.2	28.9	32.2	26.4	33.5	18.9	27.9
High school grad.	10.5	6.8	8.2	7.5	11.2	8.1	9.9
Trade school grad.	2.9	3.4	3.4	4.8	4.6	2.4	3.9
Other non-university	17.8	27.3	28.3	21.2	21.7	2.0	23.8
Some university	5.2	5.5	7.8	8.0	6.2	16.7	11.2
University degree	2.6	4.9	5.9	8.5	4.1	27.2	12.2

*Figures do not add up to 100% due to rounding.

Source: Canada. Statistics Canada 1999.

Statistics Canada follows international convention in defining the 'labour force' as the sum of all persons age fifteen or over who are not retired, and who are either employed or unemployed (Canada. Statistics Canada 2002). In order to be classified as 'unemployed', a person must either be on temporary layoff or have actively looked for work within the last four weeks. Persons who may wish to work, but who have not actively looked for a job for four weeks, are therefore not considered part of the workforce or counted among

the unemployed. In Southwest Nova Scotia much of the available work is seasonal, notably in fish harvesting and processing, in the forests, in construction, and in the tourist industry. Many well-paid workers expect annual seasonal layoffs, and so high unemployment rates are not necessarily an indicator of regional poverty. In Southwest Nova Scotia the labour force participation rate, the percentage of persons who either have a job or expect to have one soon, is a better indicator of local employment opportunities.

Labour force participation rates in most of the census subdivisions of Southwest Nova Scotia were close to the Nova Scotia average of sixty-one percent in 1996 (Table 2.3).

TABLE 2.3. LABOUR FORCE ACTIVITY, 15 YRS. AND OLDER, BY CENSUS SUBDIVISIONS AND TOWNS: 1986 AND 1996

PARTICIPATION RATES (%):

	Total Population		15-24 Yrs. of Age		Males		Females	
	1986	1996	1986	1996	1986	1996	1986	1996
Barrington	62.6	61.1	64.4	58.2	77.8	71.5	47.0	50.6
Clark's Hrbr	59.8	62.8	51.2	65.4	71.3	69.7	48.8	55.0
Argyle	54.3	59.3	58.4	61.3	66.7	70.1	41.8	48.9
Yarmouth	60.0	60.7	61.9	60.1	72.2	70.5	47.7	51.4
Yar. Town	55.8	54.3	62.5	56.5	69.2	64.6	44.7	45.8
Clare	58.3	60.4	64.6	65.9	71.0	69.8	45.6	50.9
Digby	58.6	55.3	66.6	54.1	68.1	64.1	49.0	46.8
Digby Town	59.2	49.3	71.3	57.7	70.2	60.4	50.2	40.3
Nova Scotia	61.5	61.0	62.7	59.7	73.5	68.9	50.1	53.6

UNEMPLOYMENT RATES (%):

	Total Population		15-24 Yrs. of Age		Males		Females	
	1986	1996	1986	1996	1986	1996	1986	1996
Barrington	14.5	19.9	21.7	26.9	9.7	18.1	26.3	22.3
Clark's Hrbr	10.6	25.5	23.8	29.4	8.1	22.6	14.3	31.8
Argyle	16.0	11.7	23.6	18.8	13.9	10.1	19.9	13.9
Yarmouth	14.4	14.2	25.6	26.9	13.2	14.1	15.8	14.3
Yar. Town	17.5	12.7	26.8	25.0	17.0	12.4	18.2	13.1
Clare	16.8	18.4	19.7	21.2	13.7	16.9	21.6	20.2
Digby	14.0	18.9	16.3	26.1	13.5	15.6	14.8	22.9
Digby Town	14.4	12.8	19.3	13.3	15.0	9.7	14.7	17.7
Nova Scotia	10.3	13.3	17.0	23.3	12.2	13.9	15.4	12.9

Source: Canada. Statistics Canada 1994, 1999.

The lowest participation was in the Towns of Yarmouth and Digby. Participation rates remained about the same in most districts from 1986 to 1996. The notable exception was

Digby Town, where participation fell from fifty-nine to forty-nine percent in ten years. Participation also declined slightly in the Digby Municipal District. The decline in labour force participation in the Digby area can be associated with the decline in local fish landings and fish processing, and with the closure of a large Canadian Forces base nearby. The Digby area also has the highest percentage of persons over the age of sixty-five. Male labour force participation decreased in all areas except the Argyle Municipality (which includes the Pubnicos and Wedgeport) in the ten-year period. Female participation increased in all areas except Digby.

Although unemployment rates varied widely by community, they were generally higher than the provincial average in 1996. Rates were lower in the two Towns of Yarmouth and Digby where more year-round job opportunities exist, and where a smaller proportion of the population participated in the labour force. Rates were highest in Barrington, Clark's Harbour, Clare, and the Digby Municipality, communities more dependent on the fisheries, though not in Argyle/Pubnico/Wedgeport, another fisheries-dependent area. Women in Nova Scotia overall experienced a lower rate of unemployment than men in 1996, but the opposite was true in Southwest Nova Scotia, where rates were higher for women in every census subdivision. This indicates that women were more likely to be employed on a seasonal or temporary basis, and many are employed in fish plants and the tourism industry.

Table 2.4 shows that Southwest Nova Scotia's three most productive lobstering areas, Barrington, Clark's Harbour and the Argyle Municipality, also enjoyed the highest household incomes in 1996. Each had a median income that exceeded the provincial median. Furthermore, the table suggests that income distribution was more equitable in these areas, since the difference between average and mean incomes was the smallest on a percentage basis, and the incidence of low-income households was lowest. The Acadian community of Clare was not far behind, though the low-income rate was a little higher and the spread between average and median incomes was greater. The areas with the lowest income, the highest disparity between average and median incomes, and highest rates of low income, the Towns of Yarmouth and Digby, also had two of the

Table 2.4. PRIVATE HOUSEHOLD INCOME AND INCIDENCE OF LOW INCOME BY CENSUS DIVISIONS, SUBDIVISIONS AND TOWNS IN 1985 AND 1995

	Household Income				Percent Incidence of	
	Average		Median		Low Income	
	1985	1995	1985	1995	1985	1995
Shelburne Co.	34049	39023	25645	28683	12.1	14.2
Barrington	29259	41255	26133	38639	9.1	10.9
Clark's Hrbr.	29645	43575	26590	41439	13.7	11.9
Yarmouth Co.	27304	37914	22778	28371	17.0	19.0
Argyle	27785	43283	23703	38203	12.2	9.0
Yarmouth Mun.	28268	38221	24788	32648	14.6	17.0
Yarmouth Town	25679	32229	18823	25148	27.7	31.0
Digby Co.	25419	34408	20944	28371	17.0	19.0
Clare	26519	38279	22461	31374	14.1	12.9
Digby Mun.	25197	32415	20623	27326	17.6	21.7
Digby Town	22736	27541	17814	21435	26.0	34.4
Halifax City	35164	44666	28526	34339	18.3	24.5
Nova Scotia	30659	41466	26376	35035	16.5	18.8
Canada	34261	48552	29462	40209	17.0	19.7

Sources: Canada. Statistics Canada 1988, 1999.

lowest rates of unemployment, illustrating the unreliability of this measure as a predictor of a robust economy.

Tables 2.2, 2.3 and 2.4 paint a picture of a region with low levels of education, high levels of unemployment, and yet, with the exception of Yarmouth Town and the Digby area, reasonably high levels of income by rural Atlantic Canadian standards. Within the region the Argyle Municipality, including the Acadian communities of the Pubnicos and Wedgeport, stands out, with the second highest average household income, the lowest percentage of low-income households, and the lowest unemployment figures in every category.

Ethnic and Visible Minorities in Southwest Nova Scotia

Since the period of Yankee immigration in the mid-eighteenth century, three distinct minority groups have co-existed with the Anglo-American majority. The largest consists of the Acadians, but First Nation and African-Canadian communities have also existed in the region for centuries. There are two First Nation reserves in the region, the Bear River Reserve on about a thousand hectares straddling Digby and Annapolis Counties; and the Yarmouth Reserve of the Acadia Band, on twenty-eight hectares adjacent to Yarmouth

Town. Population on these reserves totaled 150 in 1996 (Table 2.1), but over 1600 people in the region claimed some aboriginal origins. African-Canadians, former slaves and their descendents, founded several communities in the region in the eighteenth and nineteenth centuries. Some of these communities still exist, and about 1150 people claimed some African origins in the 1996 census (Canada, Statistics Canada 1999).

Table 2.5 MOTHER TONGUE BY CENSUS SUBDIVISION, 1996*

	Barrington	Argyle	Yarmouth	Clare	Digby	Total
English	8650	3890	16275	2395	10520	41730
French	145	4825	1470	6480	370	13290
English and French	15	160	45	225	80	525
Other	25	10	245	30	60	370
Total Population	8835	8885	18035	9130	11030	55915

*Based on a 20% sample. Numbers are rounded to the nearest 5 and do not add up to census totals.

Source: Canada. Statistics Canada 1999.

The Acadians are a largest and most influential minority in the region. Most Acadians in Southwest Nova Scotia are bilingual, but nearly all of them speak French at home and in conversation with other Acadians. Many older French-speaking Acadians were not provided French language public schooling, and can read and write only in English. As Table 2.5 shows, francophones are the majority in the Argyle and Clare municipalities, but a small minority in the other census subdivisions. Francophones have avoided assimilation over the years by remaining in Acadian settlement areas and by developing and preserving historical and cultural accounts of themselves as a distinct community. French-speaking Acadians have also co-operated in developing commercial ventures and credit unions, and most still profess Roman Catholicism. Once among the poorer areas of Southwest Nova Scotia, the Acadian communities today, and particularly the Pubnicos, are among the wealthiest, with higher average household incomes and a smaller percentage of low-income households than many anglophone communities in the region.

The Importance of the Fisheries

The fisheries have played an important part in the development of each Southwest Nova Scotia settlement area, but at different times, in different ways, and to varying degrees. Clare, for instance, was once known more for its forest industries, and Yarmouth was

once a prominent international shipping centre. There are many ways to gauge the importance of the fisheries in a local economy. Most simply there is the quantity and variety of fish landed. There is the landed value of the catch as a percentage of the local gross domestic product, but there is also the product value after local processing. There is the percentage of local people employed in fish harvesting and processing, the combined wage that they earn, and whether they are employed full-time year-round. There is the amount of capital invested in harvesting and processing equipment. There is the number of local fish processors, the value of the fish they process and the amount of value they add. There are the local 'backward linkages': boat builders, fishing gear and supply manufacturers, transportation and service companies and government agencies serving the fisheries. Finally, there is the symbolic and cultural importance of the fisheries. The Town of Digby, for instance, identifies itself to tourists as a fishing centre though only five percent of the region's fish are landed there (Table 2.7), and though most of its residents find employment outside of the fishery.

Unlike many other Atlantic Canadian fishing regions, Southwest Nova Scotia continues to have access to a wide variety of commercial species. As Table 2.6 shows, the groundfish³ fishery for cod, haddock, pollock, hake and related species remained active here after it was closed or severely restricted in most other Atlantic Canadian regions to protect endangered stocks. Pelagic species, mostly herring, are available in commercial quantities. Invertebrate species at hand include mollusks and crustaceans. Most of the mollusks landed in the region are scallops. Lobsters are the major crustaceans, but several species of crabs are harvested. In 1998, despite the ongoing 'fisheries crisis', the fishermen of Southwest Nova Scotia landed more fish by weight in each of these species categories than they did in 1953. They caught twice as much groundfish, five times as much pelagic and estuarial fish, three times as much lobster, and landed twenty times the weight of other shellfish (Table 2.6).

³ Groundfish (demersal fish) are caught near the ocean floor. Pelagic fish are caught in upper or mid-ocean areas. Estuarial (diadromous) fish such as eels, smelts, and gaspereau (alewife) are caught in places such as river mouths, where fresh and salt water mix.

Landings did not grow incrementally. The amount of fish available to be caught fluctuated in each category over these forty-five years, and fishing technology and fishing effort changed, influenced by markets and changes in federal fisheries policy. I chose the year 1981 as a reference point for its proximity to several important turning points in the fisheries of Southwest Nova Scotia. Groundfish landings were at a historical high, and poised for a decline. The pelagic fishery was in a slump following phenomenal growth in the mid-1970s. Inshore scallop landings were declining, but the offshore scallop fleet was doing very well. Lobster catches were at or near a post-war low. I chose 1953 as a baseline because it was the first year for which comparable landings records by Fisheries Statistical District were available. At the time of writing, the latest available statistics were from 1998.

Table 2.6 LANDED WEIGHTS (THOUSANDS OF LBS.) BY FISHERIES STATISTICAL DISTRICTS*, 1953, 1981 AND 1998.

	Groundfish			Pelagic and Estuarial Fish			Lobsters			Other Mollusks and Crustaceans		
	1953	1981	1998	1953	1981	1998	1953	1981	1998	1953	1981	1998
Barrington (32)	10151	57104	23818	2152	7101	8880	3305	2293	9125	0	191	211
Argyle (33)	234	14936	24407	4277	31526	28649	2407	1971	7026	75	2	562
Yarmouth (34)	2956	7648	14145	4693	59337	47379	1664	2404	5049	262	9772	11307
Clare (36)	2621	13433	5237	2203	13924	37388	609	328	2108	46	19957	7718
Digby Neck (37)	16392	25031	5443	3164	4764	604	649	549	1660	0	3245	915
Digby (38)	1103	3170	3009	9074	1034	12110	124	35	112	1056	21662	6821
Totals (32 - 38)	33457	121322	76058	25563	117692	135010	8758	7580	25080	1439	54829	27534

*Fisheries Statistical District numbers are in parentheses.

Sources: Canada. Dominion Bureau of Statistics, Fisheries Section, 1954; Canada. Department of Fisheries and Oceans, Commercial Data Division, 1982a, 1999a.

In 1953 the groundfish fishery in Southwest Nova Scotia was a small-boat, hook and line, inshore enterprise. With government encouragement and support, especially following the declaration of the 200-mile limit in 1977, the dragger fleet grew rapidly, and by 1981, as catches were peaking, the inshore fleet accounted for only thirty-eight percent of the total. By 1998 the inshore fleet was landing only fifteen percent of a much lower total catch, most of this in Barrington and Cape Sable Island. The most successful dragger fleets were in Cape Sable Island, the Pubnicos, and Yarmouth, and consisted mostly of vessels under sixty-five feet in length.

There is a small but lucrative tuna and swordfish fishery in the Barrington and Argyle Statistical Districts and some mackerel are landed, but herring is the region's major pelagic catch. In 1953, small-boat fishermen caught herring using weirs or gill nets, but when the Pacific Canadian herring fishery collapsed in the 1960s, a fleet of Pacific Coast offshore purse seiners was relocated to Southwest Nova Scotia. Herring landings there had skyrocketed to over a half billion pounds in 1968, when the federal government banned the reduction of whole herring into fertilizer, closing a major market for the fish. Landings recovered somewhat when processors discovered a demand for herring roe in Japan in 1972, but overfishing led to lower catches and serious stock depletion by 1981 (Canada. Task Force on Atlantic Fisheries 1982: 331). In 1981, the offshore seiner fleets, based mainly in the Pubnicos and Yarmouth, landed seventy-three percent of the pelagic catch. Catches had grown by thirteen percent in 1998 due to increased landings in Clare and Digby. By this time, the offshore fleet was delivering ninety-two percent of Southwest Nova Scotia's pelagics.

The 'other mollusks and crustaceans' category includes clams, squid, and several varieties of crab, but nearly all the landings by weight are of scallops. In 1953, scalloping was an inshore fishery conducted in the Bay of Fundy almost entirely out of Digby Town, with a few landings in Yarmouth. In that year, the Fisheries Research Board of Canada (FRB) located several rich scallop beds on George's Bank, and the offshore scallop fishery began in earnest in 1954 (Knickle 1983:13). The Scotia-Fundy offshore scallop fishery started in the Lunenburg area, but in the early 1960s the federal government began subsidizing the construction of large offshore scallop draggers, and new fleets appeared in Clare and Yarmouth. According to Knickle (1983), when the federal fisheries department finally limited entry in 1973, there were seventy-two offshore scallop vessels, averaging one hundred feet in length, operating between Lunenburg and Saulnierville. Most vessels were based in the Lunenburg area, but eleven were berthed in Saulnierville, and eight in Yarmouth. In 1981, scallop landings in Southwest Nova Scotia were evenly split between inshore fishermen operating vessels under sixty-five feet in length, and the offshore fleet, corporately owned and operated. In 1986 the DFO separated the inshore and offshore scallop fishing areas, effectively restricting the fishermen licensed for

inshore scallops to the waters of the Bay of Fundy. The Bay was severely overfished for the next decade, and inshore scallop landings dropped by sixty-two percent between 1981 and 1998. Today, the Scotia-Fundy offshore scallop fleet is owned by seven corporations, and regulated by enterprise allocations (EAs). Only one of these corporations, with an allocation of just over fifteen percent of the total offshore catch, is now based in Southwest Nova Scotia, operating out of Saulnierville, and offshore landings in the region fell by about fifty percent by weight between 1981 and 1998.

As Table 2.6 shows, lobster landings almost tripled between 1953 and 1998, but not in an incremental fashion. Lobster catches within the LFA 34 districts reached post-war lows in the late 1970s and early 1980s. A combination of conservation through limited entry licensing and rebounding stocks helped to bring lobster landings up sharply a few years later. Catches leveled off at historical highs in the mid-1990s and remained there through the turn of the century. The LFA 34 lobster fishery stood apart from the other major regional fisheries in two important ways during the latter part of the twentieth century. First, although a corporate-based offshore lobster fleet came into being, the lobster fishery continued to be dominated by small-boat inshore fishermen. Second, though catches rose and fell and then rose again, the proportion of the catch landed in each Statistical District remained fairly constant over forty-five years. The evidence for this in Table 2.7 is striking: proportions of catch value in 1953 and 1998 were virtually identical.

After adjusting for inflation, the total value of all species in 1998 was still six times the 1953 landed value, and almost one and one half times the value in 1981. This was a tremendous increase, considering that the population of Southwest Nova Scotia grew by only ten percent between 1951 and 1996. It was a lot of money, considering that it didn't include the value added in processing and resale. If it had been divided equally among all residents over the age of fifteen it would have amounted to over five thousand dollars per person that year. Sixty-five percent of this money came from the lobster fishery. Of course the money was not divided equally, and in fact the two least populated census subdivisions, Barrington and Argyle, together captured fifty-seven percent of the total landed value in 1998.

The Barrington Fisheries Statistical District, which includes Cape Sable Island, Bear Point, Shag Harbour and Woods Harbour, has led the region in total landed value since 1953. It has almost always led the region in lobster production, but trailed in the production of other crustaceans and mollusks, and of pelagic species. Barrington has

Table 2.7 LANDED VALUES (THOUSANDS OF DOLLARS) BY FISHERIES STATISTICAL DISTRICTS IN 1953, 1981, AND 1998.*

	Groundfish	Pelagic & Estuarial	Lobsters	Other Mollusks & Crustaceans	Total Landed Value**
1953:					
Barrington	425 (40%)	60 (9%)	1390 (36%)	0 (0%)	1875 (32%)
Argyle	6 (.6%)	70 (11%)	1063 (28%)	28 (7%)	1167 (20%)
Yarmouth	116 (11%)	237 (37%)	765 (20%)	93 (23%)	1211 (20%)
Clare	78 (7%)	34 (.5%)	270 (7%)	3 (.7%)	385 (6%)
Digby Neck	412 (39%)	62 (10%)	284 (7%)	25 (6%)	783 (13%)
Digby	33 (.3%)	171 (27%)	56 (1%)	261 (64%)	521 (9%)
1953 totals	1070 (100%)	634 (100%)	3828 (100%)	410 (100%)	5942 (100%)
1981:					
Barrington	14000 (52%)	485 (6%)	6862 (30%)	97 (.4%)	21444 (25%)
Argyle	2977 (11%)	1586 (20%)	5772 (25%)	0 (0%)	10335 (12%)
Yarmouth	1628 (6%)	4884 (62%)	7277 (32%)	4885 (18%)	18674 (22%)
Clare	2655 (10%)	669 (8%)	944 (4%)	9713 (35%)	13981 (16%)
Digby Neck	5047 (19%)	258 (3%)	1705 (8%)	1710 (6%)	8720 (10%)
Digby	660 (2%)	54 (.7%)	103 (.5%)	11240 (41%)	12057 (14%)
1981 totals	26967 (100%)	7936 (100%)	22663 (100%)	27645 (100%)	85211 (100%)
1998:					
Barrington	14776 (32%)	3796 (27%)	53966 (36%)	130 (.6%)	72668 (31%)
Argyle	14914 (32%)	3200 (22%)	42319 (28%)	326 (2%)	60759 (26%)
Yarmouth	7233 (16%)	3368 (24%)	30047 (20%)	7454 (36%)	48102 (21%)
Clare	3405 (7%)	3054 (21%)	12560 (8%)	5501 (26%)	24520 (11%)
Digby Neck	3698 (8%)	55 (.4%)	10060 (7%)	828 (4%)	14641 (6%)
Digby	2433 (5%)	838 (6%)	617 (.4%)	6591 (32%)	10479 (5%)
1998 totals	46459 (100%)	14311 (100%)	149569 (100%)	20830 (100%)	231169 (100%)

* Percentages in parentheses are the percentages of the total landed value of this species landed in this Fisheries Statistical District.

**This total landed value does not include small quantities of marine plants and other species not enumerated in this table.

Sources: Canada. Dominion Bureau of Statistics, Fisheries Section, 1954; Canada. Department of Fisheries and Oceans, Commercial Data Division, 1982b, 1999b.

usually led in landed values of groundfish, and in 1981, when lobster landings were low, groundfish accounted for sixty-five percent of the district's total catch value (Table 2.8). Barrington's inshore groundfish fleet produced about sixty-four percent of the total inshore groundfish landings for the region in both 1981 and 1998. With the region's largest lobster fleet, its most successful inshore groundfish fleet, and a small but lucrative pelagic fishery for tuna and swordfish, the Barrington district remains a stronghold of the owner-operated small boat fishery.

The Argyle Fisheries Statistical District, which includes the Acadian settlement areas of the Pubnicos and Wedgeport, was almost wholly dependent on the lobster fishery in 1953 (Table 2.8). Fishermen turned to groundfish and herring in the 1960s, and pelagic landings increased by an order of magnitude in 1965 when the herring seiners arrived.

Table 2.8 VALUE OF EACH SPECIES LANDED AS A PERCENTAGE OF TOTAL* LANDED VALUE IN EACH STATISTICAL DISTRICT IN 1953, 1981, AND 1998

	Groundfish	Pelagic & Estuarial	Lobsters	Other Mollusks & Crustaceans
1953:				
Barrington	23%	3.0%	74%	0%
Argyle	0.5%	6%	91%	2%
Yarmouth	10%	20%	63%	8%
Clare	20%	9%	70%	0.8%
Digby Neck	53%	8%	36%	3%
Digby	6%	33%	11%	50%
1981:				
Barrington	65%	2%	32%	0.5%
Argyle	29%	15%	56%	0%
Yarmouth	9%	26%	39%	26%
Clare	19%	5%	7%	69%
Digby Neck	58%	3%	20%	20%
Digby	5%	0.4%	0.9%	93%
1998:				
Barrington	20%	5%	74%	0.2%
Argyle	25%	5%	70%	0.5%
Yarmouth	15%	7%	62%	15%
Clare	14%	12%	51%	22%
Digby Neck	25%	0.4%	69%	6%
Digby	23%	8%	6%	63%

*This total landed value does not include small quantities of marine plants and other species not enumerated in this table.

Sources: Canada. Dominion Bureau of Statistics, Fisheries Section, 1954; Canada. Department of Fisheries and Oceans, Commercial Data Division, 1982b, 1999b.

Groundfish landings jumped in 1980, as lobster landings hit their post-war low. Low lobster landings in 1981 made Argyle the second poorest fishing district in the region (Table 2.7), with almost half its landed value now in groundfish and herring, mostly from offshore vessels. Landings by weight of groundfish had increased substantially in the Argyle district by 1998, and pelagic landings were down only slightly (Table 2.6). Landings of the rebounding lobster stocks more than tripled and the landed value of

lobster increased by a factor of seven (Table 2.8), returning the Argyle district to second highest in total landed value.

Though lobster has always been its most valuable fishery, the Yarmouth Fisheries Statistical District has had significant groundfish, herring, and scallop landings since 1953. Yarmouth has consistently led the region in landings of pelagics by weight, though Barrington, with its valuable tuna and swordfish landings, has surpassed Yarmouth in pelagic value since 1987. Unlike other districts, Yarmouth did not experience a significant decline in lobster landings in the late 1970s and early 1980s, and led the region in lobster production in 1981. But Yarmouth also saw the smallest increase in lobster landings in the region between 1981 and 1998, and has returned to third place in lobster production. Scallop production rose sharply in 1975, two years after the imposition of limited entry licensing. Scallop landings reached their postwar peak in Yarmouth in 1977, and then fell until the separation of the inshore and offshore fleets in 1985. In 1993, Yarmouth's offshore scallop fleet surpassed Digby's inshore fleet in scallop landings, and Yarmouth remained the region's most productive scallop district in 1998.

Historically, the three fisheries districts in Digby County have been less productive than the districts in Yarmouth and Shelburne Counties. The Acadian settlement area of Clare was the least productive district in Southwest Nova Scotia in 1953, but it surpassed all but Barrington and Yarmouth in landed value during the poor lobster year of 1981. Clare was still a minor player in the regional lobster fishery in 1998, but it had increased its share of the herring and scallop landings significantly in forty-five years, though its scallop catch had by then fallen sharply from an all-time high in 1981.

The Fisheries Statistical District of Digby Neck and the Islands led Southwest Nova Scotia in landings of groundfish by weight in 1953. It trailed Barrington in landed value in this category because its largest groundfish catch was of hake, a low value species. The groundfish fishery on the Neck and Islands was a small boat hook and line fishery in 1953, but small draggers were introduced soon thereafter and dominated the fishery by

1981. Groundfish landings by weight increased between 1953 and 1981 due to the efficiency of the dragger fleet, but not at the phenomenal rate experienced in the region's other fishing districts. Hook and line fishermen worried that the draggers were over-exploiting local fish stocks (Davis 1991), and indeed, stocks of hake, once the most plentiful species in the district, had all but disappeared by 1981. Groundfish catches by weight fell by seventy-eight percent on the Neck and Islands between 1981 and 1998. The district's relatively small but dependable lobster landings have been the most valuable catch here since 1993.

Digby Town is situated on the Annapolis Basin and it is a ten kilometre sail from the wharf through Digby Gut to the open waters of the Bay of Fundy. While Digby is far from productive groundfish and lobster grounds, the famous Digby scallop beds lie just outside the Gut. These beds produced half of the district's landed fish value and most of Southwest Nova Scotia's mollusk catch in 1953. The Digby Fisheries Statistical District was also second in the region for herring production in that year. Herring landings in Digby were much lower over the next three decades, and did not return to the 1953 level until 1987. The herring catch reached an all-time high in 1990 before it fell again. Herring landings were higher in 1998 than in 1953, but landed value was less, when adjusted for inflation. The inshore Digby scallop fleet continued to grow after 1953, and expanded its range to other scallop beds in the Bay of Fundy. Scallop landings by weight in Digby increased by a factor of twenty between 1953 and 1981 (Table 2.6). Following the separation of inshore and offshore fishing areas in 1986, landings increased again to an all-time high of over sixty-four million pounds in 1989. Overfishing severely reduced the inshore scallop stocks, and by 1998 Digby's scallop landings by weight were half of what they had been in 1981. The Digby district trailed the region in combined landed value of all species for most years between 1953 and 1998, with the exception of a few years in the 1980s when scallop landings were especially high.

It would be useful to know the number of fishermen active in each of the Fisheries Statistical Districts over the years, the proportion of them pursuing each species, and the relative numbers of full-time, part-time and occasional fishermen. The Dominion Bureau

of Statistics, and its successor, Statistics Canada, published detailed labour force statistics between 1962 and 1972 in an annual handbook (Dominion Bureau of Statistics, Industry and Merchandising Division 1965; Statistics Canada, Manufacturing and Primary Industries Division 1973). However, these data have not been published since the Department of Fisheries and Oceans took over responsibility for their collection in 1973.

Table 2.9. NUMBER OF FISHERMEN BY FISHERIES DISTRICT, BY EXTENT OF EMPLOYMENT*, AND BY MAJOR SPECIES FISHED IN 1953, 1962 AND 1972.

	Total	Full-time	Part-time	Occasional	Ground-fish	Herring	Scallops	Lobsters
1953:**								
Barrington	771							
Argyle	894							
Yarmouth	712							
Clare	269							
Digby Neck	359							
Digby	147							
1953 totals	3152							
1962:								
Barrington	962	618	271	73	761	254	2	947
Argyle	983	107	621	255	104	68	156	834
Yarmouth	469	187	170	112	224	172	1	405
Clare	204	55	107	42	111	28	25	154
Digby Neck	380	179	102	99	217	92	1	305
Digby	140	23	57	60	35	36	38	47
1962 totals	3138	1169	1328	641	2213	650	223	2692
1972:								
Barrington	910	800	95	15	695	66	2	1030†
Argyle	696	98	550	48	103	105	96	650
Yarmouth	429	161	246	22	128	112	9	364
Clare	199	65	112	22	84	6	44	158
Digby Neck	400	265	78	57	208	131	18	286
Digby	278	120	56	102	38	41	40	82
1972 totals	2912	1509	1137	266	1256	461	209	2570

* 'Full-time' is more than 10 months a year. 'Part-time' is 5-10 months a year. 'Occasional' is less than 5 months.

**A breakdown by extent of employment and species fished was not published until 1962.

† There was likely an error in enumeration of occasional fishermen, since a total of only 910 fishermen was recorded in Barrington in 1972.

Sources: Canada. Dominion Bureau of Statistics, Fisheries Section, 1954; Dominion Bureau of Statistics, Industry and Merchandising Division, 1965; Statistics Canada, Manufacturing and Primary Industries Division, 1973.

Table 2.9 was assembled from the available data to illustrate trends in the earlier post-war fisheries labour force. This was a time when federal policies sought to modernize and expand the fisheries through investment in larger and more efficient vessels, and to

rationalize the labour force by reducing the number of part-time workers.

Table 2.9 shows that while the total number of fishermen decreased, the number of full-time fishermen increased by twenty-nine percent between 1962 and 1972. The number of occasional fishermen fishing less than five months a year decreased by fifty-nine percent. These statistics describe a fishing labour force that was rationalizing, professionalizing, and abandoning the traditional practice of multi-occupational seasonal rounds discussed in Chapter One. Catches of groundfish were higher in 1972 than 1962, but the number of fishermen employed in landing them fell by forty-three percent, a testament to the efficiency of the growing dragger fleet. The herring catch of 1972 was more than double that of 1962, but fewer fishermen were employed. The efficient and highly mobile seiner fleet had eclipsed the traditional weir and gillnet fisheries in herring production. Landings and employment in the scallop fishery remained about the same, but Table 2.9 illustrates the labour force mobility in this fishing sector. While there were no scallop landings in the Argyle Fisheries Statistical District in either 1962 or 1972, this district provided the largest scalloping workforce. Scalloping is probably the most physically demanding fishery in the region, but it usually pays well, and even today many Argyle fishermen sign up for stints as crew for the Yarmouth fleet. Though lobster catches were low in both 1962 and 1972, less than a third of what they would grow to in 1998, over eighty-five percent of the region's fishermen went lobstering in each year. The growth of the dragger fleet had reduced employment opportunities significantly in the region's other major employer of fishermen, the groundfishery, but opportunities in lobstering remained about the same.

It is unfortunate that such detailed statistics have not been published for more recent years. Even data on the current holders of lobster licenses proved difficult to obtain. Through the federal 'access to information' process I was able to acquire a copy of an alphabetical list of licensed lobster boat captains in LFA 34, but their addresses had been expunged from the original document. The list included 969 license holders, and, using the telephone directory, I was able to find most of their addresses. The DFO had published a directory of all licensed commercial fishermen in the Atlantic provinces in

1985 (DFO 1986) listing addresses, all licenses held, and vessel information, and this was helpful in cross checking the identities of current license holders. Table 2.10 was compiled with data from these two sources.

Table 2.10 shows the number and percentage of lobster license holders residing in each Fisheries Statistical District in 1985 and 1999. Forty-four license holders were missing from the 1985 directory, and I was unable to locate the addresses of thirty-one of the 1999 licensees. The third column shows the number of 1999 licensees who held lobster licenses in 1985. The fourth column shows the number of captain's licenses for other species held by the 1999 lobster license holders. The last column shows whether the 1999 lobster license holders who did not hold any captain's licenses in 1985 were legally licensed to work as full- or part-time crew members on fishing vessels in that year. Some of the fishermen interviewed were worried that, due to the high cost of licenses, fishermen from the more productive districts were buying up licenses from the less productive districts, thus reducing the local lobster fleet. Table 2.10 shows that the

Table 2.10. LICENSES HELD BY FISHERIES STATISTICAL DISTRICT IN 1985 AND 1999

	1985 Licensees	1999 Licensees	Held Lobster Lic. in 1985	Species Licences Held in 1985				If no 1985 Species Lic.:		
				1	2	3 - 4	5 +	Fulltime	Parttime	No Lic.
Barrington	361 (37%)	360 (37%)	198 (55%)	74	58	61	19	91	22	35
Argyle	253 (26%)	277 (29%)	138 (50%)	54	11	45	28	46	49	44
Yarmouth	162 (17%)	145 (15%)	71 (49%)	9	5	37	23	25	22	24
Clare	69 (7%)	79 (8%)	31 (39%)	3	1	10	17	22	15	11
Digby Neck	74 (8%)	74 (8%)	45 (61%)	8	12	23	5	11	7	8
Digby	6 (0.6%)	3 (0.3%)	0	0	0	0	0	1	0	2
Missing:	44 (5%)	31 (3%)	0							31
Totals:	969	969	483 (50%)	148	87	176	92	196	115	155

Sources: Canada. Department of Fisheries and Oceans 1986, 1999.

distribution of licenses among the statistical districts changed very little between 1985 and 1999. The major changes were in Yarmouth and Argyle, and this might be explained by the fact that in 1985 some skippers fishing from Wedgeport listed their home address as 'Arcadia', a nearby inshore village technically in the district of Yarmouth. A comparison of the percentage of license holders in each district (Table 2.10) with the value of lobster landed in each district (Table 2.7) shows that average catch values per licensee were quite comparable among the districts in 1999. Only Yarmouth fishermen

landed more than their 'fair share', with fifteen percent of the fishermen and twenty percent of the catch value.

Though technological advancements seem to have diminished the importance of 'local knowledge' in the fisheries, and though entry into the lobster fishery now appears mainly predicated on having enough money to buy a license, Table 2.10 shows that the typical lobster license holder is still a very experienced fisherman. Eighty-four percent of the lobster skippers licensed in 1999 were licensed professional fishermen fourteen years earlier. Fifty-five percent of them already had lobster licenses back in 1985 and more than a third also held other species licenses at that time. It seems to take more than money to become a lobster captain, but it also takes more than experience. Lobster captains employ crews of one to four licensed professional fishermen on their vessels. With limited and expensive licenses and a low turnover of captains, few of these crewmembers will have the opportunity to become captains themselves. Those who do will likely be close relatives of the captain.

Firms that purchase, process, and resell the fish harvest are an important part of the fishing industry in any region, adding value to the product and providing employment for many on land. Southwest Nova Scotia is unusual in that two of its important catches undergo very little processing on land. Scallop meats are removed from the shell at sea, and lobsters are shipped live out of the region, though some are later processed out-of-province. Nevertheless, the Nova Scotia Seafood Directory lists 104 fish processing firms in Southwest Nova Scotia that ship to Canadian and international markets (Nova Scotia Department of Fisheries and Aquaculture 1999). Thirty-seven of these firms are located in the Barrington Fisheries Statistical District, twenty-two in Argyle, nineteen in Clare, thirteen in Yarmouth, three on Digby Neck and Islands, and ten in Digby. Sixty-seven of these firms ship lobster, usually along with other products. Almost half of the firms shipping lobster are located in the Barrington district. The Seafood Directory does not list all the firms handling fish in Southwest Nova Scotia. There are smaller firms, including many lobster buyers, whose business is strictly in supplying larger firms with product.

There are larger firms, Clearwater Fine Foods in particular, with branch plants in Southwest Nova Scotia, but with headquarters elsewhere.

There are about a dozen large fish processing plants with more than 100 employees in Southwest Nova Scotia, but most plants are small, employing less than twenty-five workers. The fish plants of Southwest Nova Scotia produce a wide variety of specialty products, nearly all of which are exported. Groundfish are usually shipped to the United States as whole fresh fish or fillets, but plants in Southwest Nova Scotia also salt cure them for export to the West Indies and the Mediterranean region. Companies in Argyle, Yarmouth and Clare smoke, brine, and pickle herring and mackerel for customers in Germany and other North European countries. Herring and sea urchin roes are extracted for the Japanese market. A significant portion of the herring catch is processed for lobster bait and as salmon feed for the fish farms. No Southwest Nova Scotian companies process lobsters, but some firms hold live lobsters in tank houses for months at a time in order to meet market demands when catches are low. Most dealers with large tank houses are in the Barrington district. They receive lobsters from smaller dealers throughout the region and beyond it during the peak landing periods in December and late spring.

Summary

Each of the seven settlement areas in Southwest Nova Scotia can claim a rich and distinctive historical legacy. A review of their histories shows that Southwest Nova Scotia, as a region, has not been profoundly isolated from the outside world. The ports of Clark's Harbour, Wedgeport, Yarmouth, and Digby have prosecuted an international trade in fish, forest products, and minerals. While fishing has always been an important factor, the economy of Southwest Nova Scotia has historically been diverse, and relatively well developed. Yarmouth, in particular, has been a centre of banking, manufacture, and shipbuilding. The major trading centres of Southwest Nova Scotia were not simple, classless societies. However, outside of these major centres lie hundreds of tiny inshore fishing villages. Until the 1950s, residents of these communities were isolated from the major centres and the rest of the world by poor land transportation and communication infrastructures, and often by language, cultural differences, education, or

sheer poverty. It is in these small fishing villages, and not in the larger commercial centres, that most of Southwest Nova Scotia's lobsters are landed.

The fishery has always been the most important industry in Southwest Nova Scotia, and in 1998 it was thriving. Landed values of all species categories, adjusted for inflation, far surpassed those of 1953, and rose in all categories except 'other mollusks and crustaceans' - mainly scallops - from 1981 levels. The biggest structural change in the industry in the last half-century has been the displacement of small-boat owner operators by highly capitalized corporate fleets in three of the four major species categories. The lobster fishery has emerged as the only practical choice for individual fishermen intent on becoming owner-operators. The high cost and limited availability of lobster licenses means that very few will realize this dream, once a genuine possibility for every ambitious fisherman. On the other hand, in most communities there are more and better paid opportunities to crew on the vessels of others in the groundfish, herring, and scallop fisheries. Lobster captains are using larger vessels and hiring bigger crews, and with catches high, the pay is usually very good.

Median household incomes in Southwest Nova Scotian census subdivisions are correlated with the value of fish landed in them (Tables 2.4, 2.7). Barrington has the highest median household income, and the highest fish landings. The Argyle, Yarmouth, and Clare Municipalities are second, third, and fourth in both categories. Digby and Digby Neck and the Islands have very low landings, low median incomes, and a higher incidence of low income. These two districts have not experienced the fishing boom enjoyed in other Southwest Nova Scotia communities. Digby has been hurt by a decline in scallop landings. On the Neck and Islands, the groundfishery that once anchored the economy has almost disappeared. Besides putting fishermen out of work, this has forced the closure of all but three of the district's fish processing plants, seriously threatening its economic future.

Chapter 3

RESEARCH METHODS

Level of Analysis

This study focuses on structural changes that have transformed what was once a 'poor man's fishery' into a heavily capitalized enterprise, and the responses of fishermen and other fishing community members to this transformation. I associate this transformation with new conceptions of the meaning of justice and the basis of legitimate authority, and find it fueled by the phenomenon of globalization, and manifest in emergent class differentiation at the village level. It is an ethnographic study because it relies on field research and tries to portray the effects of and responses to structural transformations from an insider's point of view (Northey et al. 2002: 86), but it is sensitive to the fact that such points of view are embedded in a historical context and influenced by global trends of thought as well as local understandings (Marcus 1998: 79).

I chose the case study method to maximize the depth of analysis of the causes and effects of the structural transformation process. A case study permits the use of a variety of research methods to penetrate different dimensions of a research problem as they exist within a single case (Marshall 1994: 41). The use of multiple research methods allows for 'triangulation' in the assessment of research findings (Babbie 2002: 107). Although quantitative data have been incorporated in this study, qualitative methods predominate, since they are "... especially effective for studying subtle nuances in attitudes and behaviors and for examining social processes over time (Babbie 2002: 304)." By limiting the breadth of analysis to a single instance, the case study achieves greater depth of analysis, inviting comparisons with other cases which can lead to a better general understanding of the problem (Sommer and Sommer 1986: 171).

I chose the Atlantic Canadian lobster fishery as the subject of research for several reasons. First, at the time the research project was conceived, there was a flurry of concern - well documented in the news media - that the lobster fishery was on the verge of following several other fisheries in the region down the road to collapse. Federal

Fisheries Minister David Anderson had expressed this concern publicly, and suggested that further restrictions on exploitation of the resource might be needed (Gorham 1998: C1). Second, Canada's aboriginal First Nations had established the treaty right to fish "for food, social and ceremonial purposes" in a recent Supreme Court case, and a pending case argued further that First Nations in the Atlantic provinces had the treaty right to fish commercially. The arguments and consequences of these court cases challenged the existing system of resource allocation - and in doing so, provided a convenient and timely window through which to view the workings of the system itself. Third, the lobster fishery has been under the formal management of the federal government since Canadian Confederation in 1867, and the history of its regulation is well documented. The fourth consideration in selecting the lobster fishery was practical. The regional office of the Department of Fisheries and Oceans (DFO) and its largest Atlantic ocean sciences centre, the Bedford Institute of Oceanography, are located in Halifax, and major lobster fishing areas are within a few hours' drive. Finally, while major regional-level social anthropological research - culminating in a book-length publication (Acheson 1988) - had been done on the Maine lobster fishery, no comparable research had been conducted at the regional level on social aspects of the Atlantic Canadian lobster fishery.¹

As Lofland and Lofland point out, it is important in a case study to select a site that will provide the richest possible data (Lofland and Lofland 1984: 13). Because DFO manages the lobster fishery at the Lobster Fishing Area (LFA) level, it was appropriate and convenient to select a single LFA as the case to be studied. I selected LFA 34 because it is historically rich, culturally diverse, and very productive. Because LFA 34 is so productive, access to its lobster resource is more highly valued than that of any other LFA, as demonstrated by the extraordinarily high prices its limited entry licenses will fetch². Since LFA 34 is located in an area that offers most residents relatively few

¹ Two masters theses have investigated social aspects of the lobster fishery on Grand Manan Island (Recchia 1997) and on Prince Edward Island (Larkin 1990), but they were conducted at the local, rather than the regional level. John Kearney published a study of LFA 34 lobster fishermen's attitudes toward federal management practices in 1984 (Kearney 1984).

² Lobster licenses are usually sold as part of a package deal that also includes fishing equipment. Interviews with fishermen indicated that asking prices for an LFA 34 lobster 'rig' - license, vessel and gear - were approaching the million-dollar mark. LFA 34 lobster rigs are not usually advertised for sale, and it is hard

livelihood alternatives outside of the fishery, questions of the justice in distribution of access to lobster, the region's major economic asset, to relatively few individuals, inevitably arise. The abundance of lobster in the area has attracted the interest of First Nations communities attempting to exercise their newly-established treaty right to fish. It has also led to organized poaching rings as "a routine form of everyday resistance" to limited entry (McMullan and Perrier 1997: 30). The exceptional geographic, historical and cultural diversities within Southwest Nova Scotia promised a wide range of responses to issues of justice, authority, globalization and the labour process.

The Literature Search

I used three basic strategies to collect data for this study: the literature search; field observation; and structured, open-ended interviews. The literature search included a review of regional historical literature, a search of previously collected statistical data and a review of newspapers, periodicals, governmental reports, and transcriptions of meetings and conferences held between fishermen and representatives of government, and among fishermen themselves. In addition, I studied historical accounts of the state of fisheries science and Canadian fisheries management policy over time.

Lobster harvesting and management practices in Southwest Nova Scotia evolved gradually, through informal community-based processes as well as formal government regulations. Data collected from interviews and other fieldwork can provide a cross sectional 'snapshot' of the analytic unit at one point in time, but historical research is needed to situate that point in time in the context of ongoing social processes. It was therefore necessary to develop a historical perspective of the region, one that recognized the growing socioeconomic significance of the lobster fishery within each settlement area.

to estimate the value of the gear involved. An LFA 34 "lobster business" which included license, vessel and some oceanside property was recently advertised for \$2,675,000 (*Sou'wester* 2001b). An LFA 34 rig with "boat, license and gear" was offered earlier for \$750,000 (*Sou'wester* 2001a). By comparison, a lobster rig in adjacent LFA 33 was offered for \$190,000, a "lobster license only" in LFA 29 (Isle Madame) could be had for \$51,000 "negotiable", and a license with some gear in Newfoundland's Placentia Bay was listed for \$7,000 (*Sou'wester* 2001a).

I conducted a comprehensive search of historical literature pertaining to Southwest Nova Scotia in the fall and winter of 1999-2000. My search centred on the university libraries in Halifax, but included visits to several libraries and historical societies in the research area. I reviewed primary and archival sources, beginning with Lescarbot's first-hand account of Champlain's exploration of the area in 1604 (Lescarbot 1609 [1911]).

Dalhousie University's Killam Library Special Collections and the Provincial Archives of Nova Scotia (PANS) provided valuable archival material. I found the resources of the Musée Acadien et Archives in West Pubnico especially helpful in tracking the Acadian history of the region. I consulted more recent historical texts, but a comprehensive history of Southwest Nova Scotia has yet to be written. Fortunately, histories of the individual settlement areas - usually written and published by local historians in the somewhat distant past - were usually available. The findings of this historical literature search appear in Chapter 2.

Historical statistics illustrate the economic and demographic changes that have taken place in Southwest Nova Scotia over the past fifty years, and reveal variations among the settlement areas. Since 1953, the Dominion Bureau of Statistics, Statistics Canada, and finally the DFO, have been successively responsible for recording the weight and landed values of commercial species of fish by Fisheries Statistical Districts, districts whose boundaries correspond to the census districts of Southwest Nova Scotia. The census districts roughly correspond to the settlement areas, so it was possible to compare local population dynamics and standards of living with variations in the structure and importance of local fisheries over time. While census data were readily available in the university library, fisheries data were more difficult to assemble: they have not been published at the statistical district level since the DFO became responsible for keeping them in 1977. Fortunately, the DFO Commercial Data Division in Dartmouth was kind enough to allow me to make photocopies of their catch data files dating from 1978 to 1998. The pre-collected data used in this case study were assembled between January and May of 2000, and were presented and discussed in the latter part of Chapter 2.

Newspaper articles, government-sponsored studies and reports, and transcriptions of meetings between fishermen and government officials provided valuable insights into the development of the lobster fishery and the policies affecting it. I explored these sources during the first six months of 2000. This literature helped to reveal continuities and changes in the ways in which fishermen, government officials and the public have conceptualized and discussed fisheries issues. The Canadian lobster fishery has been scrutinized by Royal Commissions and other federal and provincial investigative panels since Confederation, and most recently by the Fisheries Resource Conservation Council (Canada, Fisheries Resource Conservation Council 1995) and the Auditor General's office (Canada, Office of the Auditor General 1999). Trade newspapers such as the *Sou'wester* and the *Atlantic Fisherman* provided an industry insider's view of fisheries issues over the last ten years. Fisheries have received more general press attention in Canada since the collapse of the northern cod stocks and the controversial Supreme Court decisions establishing priority of First Nations fishing rights. The lobster fishery, Nova Scotia's most economically important fishery for a century, is now covered frequently in provincial newspapers such as the *Halifax Chronicle-Herald* and the *Halifax Daily News*. The recently formed Atlantic Fishing Industry Alliance (AFIA), an industry-wide association, has issued a series of detailed position papers on the controversy over aboriginal fishing rights. I also reviewed transcripts of public meetings convened in the last decade by various joint committees of government and industry, including the individual LFA advisory committees and the Scotia-Fundy Lobster Production Area advisory committee. These transcripts provided insight into the persistent concerns of fishermen, scientists and DFO managers, and into the ways that these concerns have been expressed over the years. Findings from all of these publications informed the substantive chapters of this study, and were especially helpful as I developed questions for the interview schedules and later interpreted the responses.

I reviewed historic accounts of Canadian lobster fishery management beginning with a report from W. F. Whitcher, Commissioner of Fisheries, to Parliament in 1874 on the over-exploitation of lobster stocks (Canada, Sessional Papers 1874). I read proceedings of Canadian and international symposia on management practices. Parsons'

comprehensive study of the history and theory of Canadian fisheries management (Parsons 1993) was invaluable. I also considered theoretical works on fisheries management, including expositions of 'commons' theory and community-based management. Some of this literature informed the theoretical section of Chapter 1. The bulk of it is discussed in Chapter 4.

It was essential to learn something of the natural history of the lobster in Atlantic Canada to properly understand the basis of the arguments made by fisheries managers and scientists, as well as of those made by fishermen. I conducted a review of historic as well as current scientific literature on the species as far back as 1912 (Found 1912), looking for trends in scientific thinking on stock assessment and conservation. A comprehensive history of the development of government-sponsored Canadian marine scientific institutions (Johnstone 1977) helped to place the historic development of lobster science into an institutional context. Current scientific literature included journal articles and working papers by Canadian and non-Canadian scientists, and the proceedings of regional and international conferences such as the Canadian Lobster Atlantic Wide Studies Symposium (Canada. DFO 2001a), and the Canada - U. S. Workshop on Status of Assessment Science for Northwest Atlantic Lobster Stocks (1980). Findings from the review of scientific literature were integrated into Chapter 5, and helped inform interviews with fisheries scientists.

Field Observation

Southwest Nova Scotia covers a fairly large area, and there are 227 towns and villages within its seven major settlement areas. Field observation consisted of a visual reconnaissance of the area, informal interviews and encounters with people met along the way, and regular observation of the LFA 34 Advisory Committee meetings in Yarmouth.

I began attending Advisory Committee meetings in October of 1998. These meetings are held regularly before and after each lobster season, and at other times of the year when there are important issues to discuss. These day long public meetings bring government managers, scientists, and enforcement officials together with lobster fishermen and others

with an interest in the LFA 34 lobster industry. They are the only regularly scheduled occasions for representatives from all the regional lobster fishing communities to get together. They are an opportunity for federal officials to announce or propose management changes and to report on scientific research, and for representatives of the fishing industry to respond and advise. By observing these meetings I heard the major issues confronting the LFA 34 fishery at the time, and the differing views of fishermen's representatives from across the region. I began to distinguish the different voices expressed from within government and the industry, and to make the acquaintance of some of the key players. In all, I observed eight meetings of the LFA 34 Advisory Committee between October 1998 and June 2001. I also attended a Halifax meeting of the Gulf of Maine Lobster Production Area Working Group (of which LFA 34 is a part) in August of 2000, and a week-long meeting of the Maritimes Regional Assessment Process (RAP) on LFAs 33 through 41 inclusive, held in Dartmouth in April of 2001.

My presence at the LFA 34 Advisory Committee meetings gave me the opportunity to request interviews with some of the participants. During 1999 I spoke at length with a DFO area manager, a lobster scientist, a lobster buyer, and three lobster fishermen. In 2000 I spoke with two journalists based in the Yarmouth area who frequently covered the meetings: the editor of a local fishing industry weekly; and a free-lance newspaper and radio reporter who covered the Nova Scotia fisheries. These interviews were unstructured, conversational, and probing: I was trying to get a better feel for the pertinent issues.

In the winter of 2000, with the lobster fishing season underway, I began making a series of three- or four-day trips to the research area to probe its geographic dimensions. I explored the back roads of each settlement area, and visited every wharf where lobster was landed, chatting, when possible, with fishermen. I took photographs and made notes of my impressions. I became friendly with the staff of the Musée Acadien in West Pubnico, a treasury of local history and culture. I spent one long, cold, wet, late April day on a lobster fishing boat, the closest I came to full participant observation, though I was too seasick to be of much use as a 'participant' in the fishing operation.

These field observations helped me to cross check the historical, cultural and demographic material I had gleaned from library sources. Most important, they gave me a familiarity with the geographical layout of the region, with special characteristics of each settlement area, with the different ways that people fished for lobster. This familiarity proved essential when I later discussed issues with interview respondents.

Structured Open-ended Interviews

By conducting structured, open-ended interviews I was able to direct my research questions in a systematic way to people intimately involved in the lobster fishery. The literature search and field observations prepared me with a context for their responses. As I considered the appropriate categories of respondents to approach, I contemplated the questions that remained to be answered in keeping with the regional level of analysis to which I was committed. The inevitable time constraints and resource limitations of doctoral dissertation research dictated that I would have to be very selective. I had originally envisioned interviewing a much broader sample of fishing community members, including individuals who were not directly connected with the lobster fishing industry. After conducting twenty-nine interviews with lobster license holders, I realized this was not practical. It might have been possible if I had had the time and resources to take up residence in each of the seven settlement areas for a month or so. As it was, I was based in Halifax, and each trip to the research area was fairly expensive. Since the research area was large, I had to organize each trip around interviews in just one or two of the settlement areas, or traveling would have taken up most of my time. Many of the respondents I was looking for, and this included DFO managers and scientists, did not operate on a routine schedule. They moved around a lot in the course of their work, and might be called away suddenly from their usual place of work for unpredictable lengths of time. Most interviews were opportunistic. I might call a fisherman one evening, and he might say he would "probably" be down at his fish shanty the next morning, but that I should call before I came to be sure. In the case of lobster buyers, the best approach was to show up at their offices and see if they had time to talk that day.

Selecting the Sample Categories

In the end, I limited the formal interview sample categories to lobster license holders, wives of license holders, lobster buyers, DFO scientists, and DFO and provincial fisheries management officials. The most troubling category omission was the lobster fishing crew members. In the past, lobster boat crew members had worked with the expectation that they would eventually become captains of their own lobster vessels. With limited licensing and the high capital cost of a lobster rig, this is now rarely the case unless the captain is a close relative. In LFA 34 it is the crew members who are most likely to suffer from the consequences of recent structural changes. Unfortunately, the crew members are also extremely difficult to locate as a population. Unlike captains, they cannot be quantified and located independently through their licenses, and they don't have a union or association. My original plan was to track them down by asking each captain interviewed for a list of his crew members. There were logistical problems with this approach. Captains naturally felt obliged to ask their crew members for permission before they delivered their names and addresses to a stranger. During fishing season, crew members, like captains, are too busy to do interviews. After lobster fishing season, they may leave the area to find other work, or go on vacation. It was also likely that this approach would skew the sample. Captains could not be expected to suggest interviews with disgruntled crew members, perhaps the ones with the strongest opinions about restriction of access to the resource. Captains would be more likely to suggest interviews with crew who were family members or close friends and were satisfied with their positions and/or had some reason to believe they might eventually become captains themselves. In the end, I decided that a proper study of crew members would have to wait. It would require interviewing a fairly large, independently drawn sample of the population, and I did not have the time or resources to incorporate such a study into the current research project. I did speak to several crew members informally, and formally interviewed two: one was a captain's brother, the other a captain's wife.

The Sample of Lobster License Holders

It took some time to compile a list of the lobster license holders in LFA 34. The DFO does not make names of fishing license holders freely available to the public. I was obliged to apply for access to a list of LFA 34 lobster license holders through the federal "access to information" protocol. After about six weeks I was provided with a list from which all addresses and telephone numbers had been removed. This was problematic, since there are a limited number of surnames in Southwest Nova Scotia. For instance, of the 969³ license holders listed, thirty-seven were named 'Leblanc', forty-nine were named 'D'Entremont', and an even hundred had the surname 'Nickerson', many with the same first name or initial. Fortunately, the DFO had published complete alphabetical lists of all fishing license holders in each Atlantic province in 1985 (Canada. DFO 1986). This publication listed all of the licenses held by each individual, and the town or village of residence. From this list I was able to determine the community of residence for over half the license holders on the newer list I had received. Since most of the villages in the region are quite small, I was able to find the telephone numbers for most of these individuals. By consulting the telephone directory, and finally resorting to the "Canada 411" service on the Internet, I was able to make a reasonable guess at the telephone numbers of 933 of the 969 license holders on the list I had received from the DFO. When I began calling the fishermen, I discovered that that list was not entirely current - a few fishermen called said they no longer held licenses.

In order to select a sample of license holders proportionally representing each fishing area, I used a stratified, systematic sampling method (Babbie 2002: 200-1). I first assigned a number to each of the 115 towns and villages where the license holders lived. I numbered these communities sequentially by order of location along the coast: the lowest number was Barrington, and the highest was Smith's Cove in Digby County. In addition, I coded communities by Fisheries Statistical District. For example, the twenty-six towns and villages in District 32 (Barrington) with resident lobster license holders were numbered 201 through 226; the thirty relevant towns and villages in District 33

³ The LFA 34 fishery is limited to 967 licenses. Apparently the DFO did not remove the names of two former license holders when it added the names of the two new captains who had assumed these licenses.

(Argyle) were numbered 301 through 330; and so on. Using SPSS, I then placed the community number of each license holder for whom I had found a telephone number in a column next to his name, and ordered all the names on the list by community number. In order to select a stratified, systematic sample, I started with a randomly selected number (n) between 1 and 10. Beginning with the n th name, I selected every tenth name on the list. This gave me a sample of 10 percent (93 individuals) of the revised population of 933 license holders - those with presumed known telephone numbers - selected proportionately by community. I then arranged the selected license holders in lists by district number for convenience in scheduling interviews.

I conducted interviews with the license holders between September 13 and October 26 of 2000. I chose this period because it was the most likely time that fishermen would be at home and available for interviews. Summer fishing and summer vacations were over, and lobster fishermen typically use this time to prepare their gear and vessels for the lobster season, which begins on the last Monday of November. Deer hunting season began around the first of November, so many fishermen are not available from that time on. I visited the research area on a weekly basis during this time, for periods of between four and seven days. Each visit targeted one or two of the statistical districts. I called every number on my list at least twice. In about half the cases, there was no answer. In several cases the number had been disconnected. In four cases, I had the wrong number, and in two cases, the fishermen had retired. Some of the fishermen were out of town. In all, only seven license holders refused to be interviewed. While the sample of 29 license holders interviewed represented only about a third of the names in my stratified sample, they were fairly evenly dispersed by proportion of population among the statistical districts, and I took it as a fairly representative sample. Most of the fishermen were interviewed at home, in the kitchen or living room. A few were interviewed at their fishing shanties, where they were working on their gear.

The Sample of License Holders' Wives

When fishermen's wives were at home during interviews with their husbands, I usually asked them if they would be willing to do an interview themselves at a later date. All the

women I asked said they would. Though I chatted with many of them before and after their husbands' interviews, in the end I only formally interviewed seven of these women, in the period between September 2000 and March 2001. I selected the sample to reflect the range of participation that fishermen's wives have in the household fishing enterprise, and to represent the different settlement areas in LFA 34. In addition to learning about their activities related to the fishing enterprise, I was interested in how they felt about their communities, and whether they saw a future there for their children.

The Sample of Lobster Buyers

In order to select a sample of lobster buyers, my initial thought was to create a stratified, systematic sample, as I had done with the license holders. The province of Nova Scotia licenses lobster buyers, but the provincial Department of Fisheries and Aquaculture informed me that their identities were kept confidential. The Department did send me the Nova Scotia Seafood Directory, a list of Nova Scotia fish processors and their products, which was useful in locating some of the major buyers. In the end, I built the sample in two ways: I called on the buyers who bought from the captains I had interviewed, and I drove along the coast, stopping at lobster buying establishments when they appeared along the road. I tried to build a sample that contained examples of the several links on the lobster buying chain, from the wharf buyers to the air shippers, and I selected buyers from all the settlement areas. I interviewed buyers at their offices, all but two between February and April 2001. I chose to interview them in that part of the lobster season because lobster landings would be low: buyers would not be so busy, but they would still be likely to be at their offices. While I was able to schedule appointments with some of the larger buyers, the smaller ones were often in and out of their offices, and I found it was best to just happen by and see if they had the time. Sometimes they would invite me to come back at a later time when they weren't so busy. Some were "just too busy" to do interviews, and two refused interviews outright. In the end, I was able to conduct interviews with a fairly well distributed sample of seventeen lobster buyers.

The Samples of Lobster Stock Assessment Scientists and Fishery Managers

The selection a sample of stock assessment scientists was a simple process, since only one scientist is assigned to assess the stock of each LFA. In addition to the LFA 34 scientist, I selected the two scientists doing assessments on the adjacent LFAs 33 and 35 in order to compare their assessment methods. I interviewed the three scientists at their offices in DFO's major research facilities at St. Andrews, New Brunswick, and Dartmouth, Nova Scotia, giving me the opportunity to tour those institutions as well. To get an outsider's point of view on the fishery, I also interviewed a non-governmental fisheries scientist who operated a private consulting firm. As I wrote up my findings, I realized I would not be able to guarantee anonymity or confidentiality to the three DFO scientists, since I was identifying their quotations with the specific LFAs that each was assigned to assess. Anyone familiar with DFO stock assessment personnel would be able to match the quote with the speaker. Therefore, I contacted each scientist by telephone and read the text of the quotations I planned to use, offering each the opportunity to make revisions or clarifications. One of the three scientists chose to do so.

It was also easy to select appropriate DFO managers to interview. I chose the two most senior local managers in charge of Southwest Nova Scotia, and the senior policy advisor for Atlantic invertebrate fisheries, stationed in Dartmouth. Because lobster buyers are under the jurisdiction of the province, I also interviewed a license administrator and fisheries inspector from the Nova Scotia Department of Fisheries and Aquaculture.

Table 3.1. SUMMARY OF STRUCTURED INTERVIEWS

Category	Interviewed	Refused
License Holders	29	7
Crew Members	2	0
License Holders' Wives	7	0
Lobster Buyers	17	2
DFO Scientists	3	0
Other Scientists	1	0
DFO Managers	3	0
Provincial Administrators	1	0

Interview Procedures

If respondents were first contacted by telephone, I read a short statement describing my research project, and what the interview entailed. If the respondents were willing to be interviewed, we set a time and place for the interview to be held. In all cases, when I arrived for the interview, I first read a 'letter of informed consent', explaining the nature and purpose of the interview. The letter promised anonymity in the use of information given during the interview. It included a request that the respondent allow me to tape record the session, which in all but one case was granted. I gave respondents a copy of this letter, which included my name and telephone number in case they wished to contact me later. If respondents agreed to participate in the interview, I asked them to sign a consent form, which also had space for their name and address, in case they wished to receive a short summary of my findings. Every respondent filled in this space. I conducted interviews using a structured interview schedule, but the questions were open-ended. I designed separate interview schedules for each of the sample categories. Because interview questions were open-ended, the interviews were usually quite long, typically lasting from one to two hours. I took notes immediately after interviews to record my impressions. I transcribed the tape recordings of interviews verbatim as soon as possible, and added the notes of my impressions to the transcriptions. The recordings and transcriptions are stored in my office, identified only by chronological numbering. Copies of all the interview schedules, letters of informed consent and consent forms may be found in Appendices A and B.

Chapter 4

ADMINISTRATION AND JUSTICE IN THE LOBSTER FISHERY

It should not be necessary to state that one objective of public policy must be that it is fair, and is seen to be fair, by those to whom it is applied. But the fact is that the degree of mistrust, indeed animosity, that exists among the participants in this industry - fishermen, processors, provincial governments and the federal government alike - is such that it is almost impossible to persuade participants that *any* government decision is fair.

(Canada. Task Force on Atlantic Fisheries [the 'Kirby Report'] 1982: 356)

The Canadian lobster is a scarce public resource, managed by the federal government since Confederation under a state property regime.¹ Because the demand for lobster exceeds the supply, the federal government has continually faced the problem of administering distributive justice as it regulates access to this scarce commodity. As the Kirby Report declared, public policy must be fair, and it must be seen to be fair. Over the years, the federal government has justified its evolving management policy for the lobster fishery on social, economic, and conservationist grounds. Over the years, federally appointed commissions of inquiry have informed the policy-making process.² In this chapter I will discuss the evolution of lobster management policy, and the current issues of justice in the Atlantic lobster fishery. The most important issues today regard fishermen's participation in the management process, enforcement practices, and the status of the aboriginal lobster fishery.

¹ Patricia Marchak (1987) was probably the first to describe the management of the Canadian fisheries as a state property regime. She points out that under such a regime, stock depletion cannot be described as a 'tragedy of the commons' since the resource is treated as state property rather than common property, and access to the fishery is considered a privilege granted by the state, rather than a right.

² According to a Canadian Broadcasting Corporation (CBC) report, Canada has relied more heavily on official commissions of inquiry to inform policy decisions than any other democracy in the world (O'Malley 2001). Commissions are convened outside of the ordinary legislative process by an 'Order in Council'. An Order in Council is requested by the executive branch of government (the Prime Minister and Cabinet), and must be signed by the Lieutenant-Governor (the Queen's representative in Canada). In the past, commissions of inquiry dealing with issues of national significance have been titled 'Royal Commissions', but this designation is no longer in official use (Iacobucci 1990: 23). While there is "...a widespread view that they are used principally to delay action while removing embarrassment from the immediate vicinity of governments..." (Christie and Pross 1990: 1), commissions of inquiry, as government-independent investigations, have often been very useful in bringing the facts to light.

A History of Lobster Management in Atlantic Canada

In 1965, D. G. Wilder, a veteran lobster biologist at the St. Andrew's Biological Station, described the development of the Atlantic Canadian lobster fishery as a three-phased process (Wilder 1965: 21). The first phase ended in 1886 with peak landings of one hundred million pounds, and was characterized by a rapid expansion in fleet size and territory. The second phase lasted until about 1918, and saw a steady decline in catch and the average size of lobsters landed. The third phase, which Wilder viewed as ongoing in 1965, was a long period of stabilization in the fishery, where "...the fishery and stock have remained more or less in a state of balance" (Wilder 1965: 21). Wilder's contemporaries generally agreed with this assessment (DeWolf 1974: 15; Scott and Tugwell, 1981: 25-26), though by breaking down aggregated landings data by region, Pringle and his colleagues showed that there was considerable variation from one region to another in landing trends over time. For instance, recorded landings in the Scotia-Fundy region, where LFA 34 is located, continued to decline until about 1940 (Pringle et al. 1983: 13). Following another overall decline in landings that began in the mid 1960s and ended in the mid 1970s, L. S. Parsons appended a fourth phase, a period of exceptionally high landings which continues to the present time (Parsons 1993: 106).

Phase One: Rapid Expansion (Early Beginnings to 1886)

Aboriginal Atlantic Canadians are believed to have regularly captured and eaten lobsters before the arrival of European settlers (DeWolfe 1974:15). Although there are many tales of lobsters being used as fertilizer in the early days (DeWolfe 1974: 15; Found 1912: 51), they were also gathered by hand at Port Royal in 1606 as food for the first European settlers in the Maritimes (Lescarbot 1609 [1911]: 319-20). Hollingsworth's eighteenth century account of a commercial lobster fishery in Nova Scotia supports current aboriginal claims of lobster fishing precedence:

Lobsters are found on all parts of the sea-shore in great abundance, and the catching of them is chiefly confined to the Indians who carry them to market in their small canoes (Hollingsworth 1787: 63).

While lobsters were first caught by hand, fishermen began using gaffs, hooks and spears during the eighteenth century. By the nineteenth century, they were using traps made of a

net stretched over a hoop with bait at the centre. A string of these hoop traps could be rigged as a trawl with a buoyed line. In the mid-nineteenth century, box-type lobster traps appeared, but were not popular due to their relative expense (DeWolf 1974: 15).

Significant commercial exploitation of the lobster resource by non-aboriginals did not begin until the establishment of lobster canneries (Jansen 1981: 134). Lobster canning had begun in the Boston area early in the nineteenth century, but according to DeWolf, the first Canadian lobster cannery was not in operation until about 1845. It was located in New Brunswick on Portage Island in the Miramichi Bay, about ten kilometres offshore from the village of Burnt Church (DeWolf 1974: 15). At about the same time a cannery was established in Yarmouth, and by 1851 there were five small canneries operating in western Nova Scotia (Pringle et al. 1983: 2). The major expansion of the Canadian lobster fishery seems to have really begun in 1869 with the construction of a large cannery by a group of American entrepreneurs, apparently in Shelburne County, Nova Scotia (DeWolf 1974: 15; Pringle et al. 1983: 2). In that year, 61,000 one-pound cans of lobster were produced in Canada. The next year, production rose to a half million pounds, and in 1871 exceeded a million pounds. In 1881, the canneries reached their all-time record pack of over seventeen million pounds (Found 1912: 51). While American capital was heavily involved in the Canadian canning industry, the bulk of the product was shipped to the United Kingdom (DeWolf 1974: 18).

According to Ruth Fulton Grant, the first export of live lobsters from Nova Scotia to the United States was probably in 1872, when four barrels of lobsters were said to have been shipped from Clark's Harbour to Boston by schooner (Grant 1934: 28). Several years later a small regular trade between Yarmouth and Boston was under way, but the volume of live lobster export was small until 1882, when the Arcadia Lobster Company of Yarmouth County, probably the first Canadian firm to build a well-smack³, began shipping lobsters to Boston. Small steamers collected lobsters from fishermen along the coast, and transported them to Yarmouth for shipment. The volume of canned lobsters

³ A smack is a vessel designed to transport live fish. Originally sailing vessels, smacks are equipped with wells in their holds that are built to allow fresh seawater to circulate through the cargo.

began to decline in 1882, perhaps partly because live shippers paid fishermen more for the larger 'market' lobsters, but Rutherford and colleagues report that canned lobster still accounted for ninety-five percent of the export value (Rutherford et al. 1967: 4). The number of operating canneries continued to rise until 1900, when there were 277 in Nova Scotia alone (Pringle et al. 1983: 3).

The lobster fishery was a godsend to Atlantic Canadian fishermen. Previously they had relied on the cod fishery, but cod prices fluctuated widely and were often very low. In addition, many fishermen were obliged to sell their cod catch under the 'truck' system (Barrett 1992: 45-48). A local merchant provided the yearly capital outlay required for fishing, and the fisherman was obliged to deliver his yearly catch to the merchant in return. The fish merchant was often the only local mercantile outlet, so the fishing family might go further in debt purchasing food and household items. At the end of the year a tally was made. If the going price of cod remained low for a few years, a fishing household could slide into chronic indebtedness. The merchant normally left any credit due on account, making cash payments rarely and only at tallying time. In contrast, the early lobster canneries were eager for product and willing to pay cash on delivery (Grant 1934: 29, DeWolf 1974: 18). Lobsters were plentiful every year and easy to catch with a minimal capital outlay.

In the earliest days of the Maritimes commercial lobster fishery there was little regulation. Individual fishing communities claimed exclusive rights to adjacent fishing grounds and guarded them from interlopers. Fishing practices were regulated, if at all, by informal local norms (McMullan et al. 1993: 122-3). In some ways this early fishery resembles the 'common property regime' described by Bromley, since what regulation there was, was community-based. It is more accurately described as an 'open access regime' since the users had the privilege of access, but no specified right to use or regulate the resource. Under an open access regime the resource becomes the property of any party able to exercise control over it (Bromley 1991: 30-1), and initially that party was the local community of fishermen. The balance of control shifted as fishermen

became more dependent on the lobster fishery and canneries grew larger and more powerful:

It is interesting to note that during the late nineteenth century the cannery operators had actually established implicit property rights over particular fishing grounds, often controlling a two to four mile ocean frontage. Successful canning operations attracted new entrants to the area, leading to reduced profits for the existing operators and causing canneries to press for a leasing system that would strengthen and define their territorial rights (Scott and Tugwell 1981: 26-7).

While canneries never achieved the latter goal, some were able to establish effective control of a fishing area by leasing boats and gear to local fishermen, who were then obliged to sell to them exclusively (DeWolf 1974: 18).

The beginnings of a major commercial lobster fishery in Atlantic Canada coincide with the birth of Canadian Confederation itself. The British North America Act of 1867 placed fisheries under federal jurisdiction and so the history of Canadian lobster management is a history of federal regulation. The Department of Marine and Fisheries was created at that time, and in 1868, W. H. Venning was appointed Inspector of Fisheries for the provinces of Nova Scotia and New Brunswick (Grant 1934: 122-3). Venning expressed concern about the state of lobster stocks in 1872, noting that the average size of lobsters landed had diminished, a probable indication of overfishing. This was one of the earliest reports of a 'tragedy of the commons' (Hardin 1968) in a Canadian fishery, a tragedy that occurs not as a result of a common property regime but, as Bromley explains, because no formal property relations exist (Bromley 1991: 30). Acting on Venning's recommendations, the new Canadian government in effect assumed formal ownership of the resource under a state property regime by establishing the first lobster fishing regulations in 1873. Through an Order in Council⁴, the government outlawed the landing of soft-shelled lobsters, berried females, and lobsters weighing less than 1.5 pounds. It seems that the restriction on soft lobsters was made primarily to improve the quality of the canned product rather than to protect the resource itself (DeWolf 1974: 17-8). While the industry accepted (though did not enthusiastically obey) the prohibition on egg-carrying females, both canneries and fishermen were not happy with the other two

⁴ During the early years of Canadian lobster management, all regulations were issued as Orders in Council.

restrictions. This was partly for obvious economic reasons, but also because 'softness' was difficult to define and measure, and weighing individual lobsters on the wharf was a cumbersome task (DeWolf 1974: 17; Found 1912: 34). In response to these concerns, the regulations were modified by a new Order in Council in 1874. To better protect soft-shelled lobsters, the Order closed the fishery outright during the molting season in July and August. The weight limit was replaced by a minimum overall length limit of nine inches (Canada. Sessional Papers 1893). This was a major concession, since a nine-inch lobster weighs only about a pound.

Although separate inspectors were appointed for the fisheries of New Brunswick and Nova Scotia in 1875, their staff of 'overseers and guardians' was ineffective in enforcing the new lobster fishery regulations (Grant 1934:123). Scores of canneries had been set up in remote locations, lobsters were processed as soon as they were landed, and fishery officers had little chance to observe violations. The fact that the state had claimed ownership of the resource encouraged fishermen and cannery operators to collude in outwitting enforcement officers. Evelyn Richardson illustrates this relationship in one of her Shelburne County reminiscences:

By the time Grampa had entered the [lobster canning] business, those days [of plentiful lobsters] were past, and fishery inspectors had begun to make the rounds to see that tinkers (fish below legal size) were not being canned. Once the inspector's back was turned, however, most canners continued to use everything that was brought to them, and that included all fish too big to fall through the trap's laths. Grampa professed that if he did not buy tinkers his rivals would, and he would be forced out of business; no doubt other buyers salved their consciences, if any, with similar excuses. Probably most of them had a signal to warn the incoming boats when an inspector was about: Grampa's was a blanket hung out a cookhouse upstairs window, so that an approaching boat could not fail to see it and return his tinkers to the sea before coming to the wharf (Richardson 1960: 65).

Pressure from cannery operators induced the federal government to shorten the closed season in 1876, but in 1877 the government acknowledged regional variations in lobster stocks by introducing the first sectional regulations. The Prince Edward Island, Nova Scotia and Bay of Fundy fisheries were closed during the month of August, while the New Brunswick Gulf fishery was closed from August 20 to September 15 (Canada. Sessional Papers:1893). Grave concerns about continuing overexploitation outweighed

pressure from canners in 1879 however, and another Order in Council ordered the fishery closed in each region for eight months of the year. The Bay of Fundy and southern and eastern Nova Scotia were closed from August 1 to April 1, and the rest of the region from August 20 to April 20 (DeWolf 1974: 18). These seasonal restrictions remained in effect until 1887, and as DeWolf points out, turned lobster fishing into a part-time occupation, encouraging fishermen to return to other species in the off-season. These restrictions clearly did little to check the course of exploitation, as both catches and the number of canneries continued to rise dramatically until 1886. From a conservation standpoint perhaps the only encouraging development was in the growing live lobster trade between Southwest Nova Scotia and New England. Because harvesters received a better price for exported 'markets' than for 'canners', and because Massachusetts forbade the import of lobsters under ten inches in overall length, some fishermen in Southwest Nova Scotia lobbied for a minimum size increase (DeWolf 1974: 19).

Phase Two: The Decline (1887 - 1918)

Between 1887 and 1918, the Atlantic lobster fishery acquired many of its modern characteristics, and though catches declined after 1886, effort, aided by technological advances, increased (Scott and Tugwell 1981: 27). The hoop trap was gradually replaced by an open-ended box trap, which evolved into the modern closed box parlor trap with entrances on the sides⁵. The parlor trap has a baited 'kitchen' compartment adjacent to the entrance, and one or two 'parlor' compartments to the side from which escape is almost impossible. Fishermen began using powered vessels rather than rowboats and sailboats, and the 'Cape Island' boat design still favoured in Southwest Nova Scotia was introduced. The average number of traps fished per vessel increased from under one hundred to as many as three hundred in some areas (DeWolf 1974: 20). While most Canadian lobsters were still being canned, Southwest Nova Scotia, which produced larger lobsters and was closer to the American market, was exporting a third of its catch alive (Pringle et al. 1983: 2).

⁵ The Wheeler trap, invented by Mr. E. A. Wheeler of Cape Tormentine, New Brunswick in 1892, appears to have been the first Canadian parlour trap design (Canada, Dept. of Marine and Fisheries 1899: 26).

Continual declines in catches and lobster size coupled with an inability to enforce existing regulations led to eight investigations of the lobster industry between 1887 and 1913⁶. Forewarned of the danger of overfishing, which had led to the recent collapse of the Atlantic oyster fishery, the Minister of Marine and Fisheries requested a combined inquiry into the states of both the oyster and lobster fisheries in 1887. The commissioners published their 'Report on the Lobster Fisheries of Canada' in 1888 (Canada. Sessional Papers 1888). The Report contained a proposal to shut down the lobster canneries for three or more years as a conservation measure. Fishermen from Southwest Nova Scotia demanded that canning be prohibited in their area to encourage the more lucrative live export market, but cannery operators argued that live exports should be prohibited, since processing added value and created more jobs (Canada, Sessional Papers 1888). In the end, the Department of Marine and Fisheries took no action to restrict canning operations, and Canadian lobster fishing effort was spurred by increasing demand from the canneries: American catches were falling even more precipitously, and canneries were closing in Maine due to new size restrictions (Pringle and Burke 1993: 97). An eleven-inch lobster that had fetched a wharf price of a penny or two in 1887 brought a fisherman ten to twenty cents by the mid-1890s, depending on the time of year (Canada, Department of Marine and Fisheries 1899: 7). The average size of lobsters caught in Canada fell from three pounds in 1870 to two pounds by 1890 (Rutherford et al. 1967: 3). The 'Report on the Lobster Fisheries of Canada' also recommended protecting spawning periods and berried lobsters by lengthening the closed seasons. Despite this recommendation, the fisheries minister, through Orders in Council, reduced the closed seasons from eight to six months, while maintaining the existing size limit of nine inches and the prohibition on berried lobsters. These regulations remained virtually unchanged until 1899 (DeWolf 1974: 21), in spite of renewed warnings of overfishing and stock

⁶ DeWolf (1974: 19) mentions eight 'commissions', but only discusses seven of them. These include six commissions of inquiry convened by Orders in Council on the request of the Minister of Marine and Fisheries, and one investigation by a Parliamentary Select Standing Committee on Marine and Fisheries in 1909. The eighth investigation produced the 'Report on the Lobster Industry of Canada, 1892' (Canada. Sessional Papers 1893). Compiled by the Deputy Minister of Marine and Fisheries, it was not a 'commission' report.

declines presented in the Department's own 'Report on the Lobster Industry of Canada' in 1893 (Canada. Sessional Papers 1893).⁷

A Liberal government under Wilfrid Laurier assumed power in late 1896, and the new Minister of Marine and Fisheries requested a fresh and thorough inquiry into the lobster fishery. An Order in Council authorized appointment of the Commission on the Lobster Industry in the Maritime Provinces (the 'Prince Commission') on September 27, 1898. The Prince Commission produced a comprehensive report on the biological, technological, economic and social circumstances of the fishery at the time (Canada, Department of Marine and Fisheries 1899). Professor E. E. Prince, a respected lobster scientist who had already been appointed Commissioner and General Inspector of Fisheries in 1893 (Johnstone 1977: 24), chaired the Commission. Fully half of the Commission's report was devoted to the biology and habits of the lobster, and showed a comprehensive store of scientific knowledge, much of it congruent with today's lobster science. However the Commission members, like most DFO scientists through the 1970s, had the mistaken conviction that while some lobsters might make short winter migrations to deeper water, lobster stocks were basically local and discrete:

The lobster is an inshore creature and does not wander far out to sea... Each particular bay or inshore area...may be said to have its own local supply of lobsters. Such localities, once cleaned out, are not replenished the way they would be, did schools of lobsters move over extensive areas (Canada, Department of Marine and Fisheries 1899: 7).

The Commission members were aware of the existence of offshore lobsters, but regarded them as a separate stock:

While lobsters appear to mainly frequent the comparatively shallow inshore areas, yet they are known to occur on grounds nearly forty miles distant from shore, and in depths of from forty to fifty fathoms; but these deep water lobsters were described in evidence given before the Commission as peculiar in colour, viz. : a deep blue tint, with thicker shell and larger claws and in other details unlike the schools which are found nearer the mainland and at depths not exceeding ten or fifteen fathoms (Canada, Department of Marine and Fisheries 1899: 24).

⁷ Ministerial disregard of the internally produced Report of 1893 belies an obvious tension between the career civil servants who produced it, and the incumbent fisheries minister, Charles Tupper, a professional politician who was destined to become the Conservative Prime Minister (for a scant three months) in 1896.

In terms of fishing technology, motorized vessels were not mentioned, but there is some discussion of trap design and deployment (Canada, Department of Marine and Fisheries 1899: 26). The Wheeler or parlour trap was starting to become popular, but most fishermen were still using the simple box trap without a parlour. In some areas, these traps continued to be strung in long trawls of up to 150 traps, but in Southwest Nova Scotia fishermen were now setting them singly with individual buoys. Traps were being set further out, as many as ten miles offshore in Southwest Nova Scotia. Box traps, once almost universally four feet in length, had been shortened for convenience of handling, but laths were being spaced closer together to retain smaller lobsters. Fishermen had also found that fresh or lightly salted bait worked better than the foul-smelling bait formerly used.

Economically speaking, the Prince Commission report was cautiously optimistic. It expressed the conviction that, "the United States fishery is nearly exhausted," and noted that since the European fishery was very small, Canada might at that very moment be poised to dominate the world market (Canada, Department of Marine and Fisheries 1899: 25). Like most DFO managers today, Commission members recommended emphasizing value rather than volume in the fishery. They favoured the live lobster trade over canning, noting early successes in exporting live lobsters to Europe as well as the United States. Targeting larger 'market' lobsters would also contribute to conservation, though most fishermen opposed an increased minimum size.

As for social factors, the Commissioners seemed most concerned with the increasing dependence of many coastal communities on the lobster industry. The fishery engaged as many as twenty thousand fishermen and yet, "...has reached a critical stage... The signs of exhaustion are unmistakable" (Canada, Department of Marine and Fisheries 1899: 8). The Commissioners worried that many people had abandoned other traditional occupations such as farming, berry-picking and collecting Irish moss, as well as the other fisheries, for the quick money to be made at lobstering (Canada, Department of Marine and Fisheries 1899: 40). The Commissioners seemed genuinely surprised at the level of 'local knowledge':

A survey of the evidence plainly shows that the fishermen, as a body, have a great interest in everything that concerns their occupation and the resources which provide that occupation. They possess a large amount of real information, much of which they have freely laid before this Commission, and they in general evince a power of observation which is surprising, considering the opportunities which most of them have...(Canada, Department of Marine and Fisheries 1899: 39).

But it is clear that the options of community management or co-management of the resource did not occur to the Commissioners. Instead, thoroughly committed to a state management regime and convinced of the superiority of 'scientific' knowledge, they continued:

...at the same time there remains a large amount of information of which they should be in possession, and were these suggested educative influences brought to bear, it would act as a moral persuasive and in the opinion of the Commissioners would render the task of enforcing reasonable laws far more easy in the future than the carrying out of regulations appears to have been in the past (Canada, Department of Marine and Fisheries 1899: 39).

Though less bluntly expressed, this patronizing tone still lingers in the background of some DFO management discourse to the present day. By claiming not only ownership of the fish, but sole ownership of the correct knowledge of the fish, the state rejects two important claims the fishing community has toward its own dignity and empowerment. This makes it easier and even imperative for 'self-respecting' fishermen to rationalize the transgression of state regulations (Durrenberger and Pálsson 1987; Taylor 1987). At the same time, by making these claims, the state undermines the bases of any pre-existing informal community-based restraints grounded in norms of fairness and resource stewardship (McCay and Acheson 1987: 9).

The Prince Commission was specifically instructed to report on and make regulatory recommendations in six areas (Canada, Department of Marine and Fisheries 1899: 28). Considering the depth of the investigation and the deep concern over stock depletion, the recommendations are surprisingly few. The Commission saw no need to restrict types or quantities or placement of gear, with the exception that gear types should be limited to some form of box trap and not be placed in less than twelve feet of water. In terms of fishing seasons, the Commission had perhaps its most lasting influence in recognizing the distinctly different characteristics of the fishery in different parts of the Maritimes (Found

1912: 54). It divided the Maritimes into five lobster fishing areas and recommended different fishing seasons for each. These areas and fishing seasons have been adjusted over the last hundred years, but they established the basis for the current Lobster Fishing Areas (LFAs) and seasons. Remarkably, given their concern for conservation, the Commissioners recommended a reduction in the minimum legal size for lobsters all areas except Southwest Nova Scotia because, "...evidence everywhere showed that the strict enforcement of the present law would practically close the canning industry and have the most serious consequences upon the fishing population" (Canada, Department of Marine and Fisheries 1899: 30). To be fair, the Commissioners did "...take into consideration the evidence bearing upon the size at which lobsters reach maturity and when they generally carry eggs" (Canada, Department of Marine and Fisheries 1899). For example, they made their smallest size limit recommendation, seven inches, for the Northumberland Strait, where modern regulations still specify a smaller limit, and where current scientific research confirms that lobsters mature at a much smaller size. The Commissioners strongly recommended continuing protective regulations banning the capture of berried lobsters, but were uncertain how to enforce such a ban. They considered a novel proposal to require each fisherman to be sworn in as a fishery protective officer, bound by oath to release all berried lobsters and to report all violations. This idea was rejected because, "...it was unreasonable to suppose that any fisherman would willingly inform against his brother fishermen" (Canada, Department of Marine and Fisheries 1899: 32). Instead they recommended that cannery managers be put under oath not to receive berried lobsters. The Commission found little substance to allegations of injury to other fisheries by lobstering, but presented its strongest recommendations within the sixth and final assigned area of inquiry, artificial hatching of lobsters. For seven years, experiments using eggs stripped from berried females had been conducted in Pictou, Nova Scotia and the Commissioners felt they held great promise: "... the Commissioners cannot too strongly express their opinion in favour of artificial hatcheries" (Canada, Department of Marine and Fisheries 1899: 33). They recommended building inshore spawning reserves that could be stocked with berried lobsters purchased from fishermen. The Commissioners favoured a 'supply side' strategy for lobster conservation. Rather than threaten an important industry with effort restrictions, they proposed to artificially

increase the supply of lobsters available. This strategy was driven by the Commissioners' belief that enforcement of any regulations beyond the closed seasons was practically impossible.

The government adopted the Prince Commission's modest recommendations with few modifications. The most important modification was the division of the Bay of Fundy and western Nova Scotia from Yarmouth to Halifax into separate lobster fishing districts, bringing the total number of Maritime districts to six (DeWolf 1974: 22). At this time, the lobster fishery was already the most valuable fishery in the Maritimes, and by about 1900 it had exceeded the value of the cod fishery in Nova Scotia (Innis 1954: 437). Canneries had reached their peak in numbers, with 277 operating in Nova Scotia, and a total of 760 in the Maritimes (Pringle and Burke 1993: 97). For the next ten years, the volume of canned lobster produced leveled off at about ten million pounds a year, and about an equal weight of live lobsters was being exported annually (Found 1912: 51-2). In a report to the Canadian Commission of Conservation on the lobster fishery, Found noted that while some people believed the stocks had achieved a sort of equilibrium, in fact effort had greatly increased (Found 1912). Fishermen were using motorized vessels and more and better traps, fishing wider areas and landing smaller lobsters. Beginning in about 1910, landings suffered another steep decline, bottoming out at about twelve million tons in 1918 (Parsons 1993: 106). Some of this decline may be explained by a decrease in lobster fishing effort. Fishermen shifted their focus to the groundfishery, responding to new North American markets for fresh and frozen fish (Watt 1963: 20-1) and the disruption of canned lobster trade with Europe caused by the First World War.

Three more investigations of the fishery were commissioned between 1909 and 1912. The first, by a Parliamentary Select Standing Committee, was unable to make recommendations, and so the Minister of Marine and Fisheries requested another commission of inquiry. The Commission on the Lobster Industry in Quebec and the Maritimes was convened by Order in Council on June 21, 1909. The Commander of the Fisheries Protection Services for the Gulf of St. Lawrence, William Wakeham, a Gaspésian physician and former Arctic explorer, was appointed to undertake the inquiry

and make recommendations. (Annett 1999). Wakeham recommended a minimum size increase to 10.5 inches for the Bay of Fundy and Nova Scotia south of Halifax, on the grounds that no lobsters smaller than this were allowed into the United States. Wakeham wanted to encourage more fishermen and buyers closer to U.S. markets to turn to the more valuable market lobster export trade, and the size increase would protect spawning stocks. Wakeham predicted that the higher prices paid for larger lobster would compensate for the reduction in numbers caught (DeWolf 1974: 21). For the other lobster fishing districts, Wakeham recommended a minimum trap lath spacing of 1.25 inches rather than a size limit (DeWolf 1974: 22). But the new regulations introduced in 1910 only mandated a 10.5-inch minimum size limit for Western New Brunswick. The rest of the Bay of Fundy was to retain the nine-inch limit, and size limits were abolished everywhere else, to be replaced by minimum lath spacing (DeWolf 1974: 22). Minimum lath spacing was unpopular with fishermen, who claimed that widely spaced traps caught as many, if not more small lobsters anyway. Members of the Conservation Commission of 1912 contended that the lath spacing rule was unenforceable because traps were underwater and out of sight during the fishing season (Found 1912: 77). Following the recommendations of the Commission to Investigate and Report on the Conditions and Requirements of the Shellfisheries of the Maritime Provinces, convened by Order in Council under the new Conservative government of Robert Borden and chaired by E. E. Prince, the lath spacing regulation was rescinded (DeWolf 1974: 22).

The deployment of new patrol boats and the presence of shore officers on the wharves did little to deter rampant illegal fishing practices (Found 1912: 73). Canadian Supervisor of Fisheries W. A. Found admitted that the size limit had become "...a dead letter, notwithstanding that it remained a condition of the regulations" (Found 1912: 55). Fishermen could not be persuaded from scrubbing the eggs from berried lobsters and selling them because some of their colleagues were permitted to sell berried females to the hatcheries:

I am of the opinion that if there were no hatcheries at all, so that fishermen on all parts of the coast would be on an even footing, it would be possible, by an educational campaign, to induce them, in their own personal interests, to liberate all berried lobsters they might take (Found 1912: 58).

Accounts of this second phase in the lobster industry's development show state managers focusing on hatcheries and gear and seasonal restrictions rather than size limits as conservation strategies. Though they feared a crisis of overfishing, they felt incapable of checking the illegal practices of fishermen at sea. Though there was a faintly expressed hope that education or economic necessity might persuade fishermen to release small and berried lobsters, hatcheries were promoted on the grounds that this was unlikely. There was an implicit acknowledgement of the necessity for some sort of community-based management process, but this was usually expressed in terms of the development of individual morality among fishermen (Canada, Department of Marine and Fisheries 1899: 39). For W. A. Found, the prospect of a 'tragedy of the commons' loomed:

I am very much afraid that if more restrictive regulations are not enforced, we can expect nothing but a continued decline in the fishery... The decline is likely to be more rapid in the future than it has been in the past. It must be the case, as it was in the oyster fishery, because as the number of producing lobsters becomes less, the sea is receiving a lesser number of fry each year, and with the extraordinary efforts that are being made to catch as many lobsters as possible, the candle is being burned at both ends (Found 1912: 62).

Phase Three: Stabilization (1919 - 1970)

In fact, Found's dire pronouncements did not come to pass. The year 1918 remains as the all-time low point in lobster landings and for the next fifty years catches fluctuated between thirty and fifty million pounds (Rutherford et al.1967: 2). Prices for lobster appear to have varied inversely with supply until the beginning of World War II, giving a fairly stable landed value that hovered around four million dollars for twenty-five years (Rutherford et al.1967: 2). A number of factors combined to bring about this period of relative stability. One factor was an arrested technology. The means of capturing lobster with standardized motor vessels and the parlour trap changed very little in the next fifty years. Another factor was the institution of licensing lobster fishermen. Licenses were required after 1918, and while they were freely available, they professionalized the occupation, clearly separating poachers from legitimate fishermen. A third factor was the diminishing importance of canneries. Canneries had caused the depletion of stocks because they encouraged fishermen to land small and often sub-legal lobsters, and berried

females. By 1919 there were only 134 canneries operating in Nova Scotia, less than half the 1900 total, and the canning industry was beginning to concentrate in Prince Edward Island and New Brunswick in areas where lobsters matured at a smaller size (DeWolf 1974: 20). By 1936 over half the value of lobster exports was in live product (Rutherford et al. 1967: 4). The canning industry had been displaced to large extent by the burgeoning live export trade. American demand for live Canadian lobsters had increased, and the transportation system for shipping live lobsters was much improved. Exporters of live lobsters could pay a higher price than the canneries: in 1927 for instance, fishermen could get twenty-five cents a pound for market lobsters, but only eight cents for canners (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands 1928: 10). In areas such as Southwest Nova Scotia, where lobsters matured at the larger size preferred by exporters, canneries disappeared. But in addition, eighty percent of Canadian canned lobster was exported to Europe, and competition from cheaper Japanese canned crabmeat had seriously eroded that market (Pringle and Burke 1993: 98).

The work and influence of A. P. Knight was an important fourth stabilizing factor in the lobster industry. Professor A. P. Knight of Queen's University became a member of the Biological Board of the Marine Biological Station at St. Andrews at its inception in 1898, and served as its chairman from 1921 to 1925 (Johnstone 1977:30). As one of St. Andrews' 'summer scientists', Knight involved himself in many areas of fisheries research but found his specialty in 1913 when he began investigating the habits of lobsters at the government hatchery at Long Beach near East Ferry on Digby Neck (Johnstone 1977: 80). A. H. Huntsman, the former director of the St. Andrews station for whom the laboratory there is named, described Knight as follows:

Dr. Knight wasn't [the best scientist] from a strictly scientific standpoint. He did not pretend so much to discover things, or basic things, as Professor Macallum did, as try to get the results of scientific investigation practically applied to the fisheries (Johnstone 1977: 75).

Unlike most of his academic colleagues at the station, Knight consulted frequently with fishermen from the start, trying to make use of what he had learned and trying to learn

what would be useful to know. After five years of study at the lobster hatchery, he concluded that hatcheries, as much as overfishing, were the principle cause of the decline in lobster landings (DeWolf 1974: 22). Knight argued that this was because eggs were much more viable when carried to term by female lobsters, and because the hatcheries gave fishermen an excuse to land berried lobsters. Furthermore, there was no evidence that hatcheries were enhancing the natural populations (Nicosia and Lavalli 1999:19)⁸. As a result of Knight's recommendation, hatcheries were closed in 1919, and it is probably more than a coincidence that yearly lobster landings stabilized at that point. Two years later he became Chairman of the Biological Board, the federal marine scientific institution of the time, with the declared intention of directing efforts toward more practical studies and began hiring permanent staff to replace the university-based 'volunteers' at St. Andrews (Johnstone 1977: 104). This practical bent was appreciated by the Department of Marine and Fisheries and improved what had been a deteriorating relationship between the Department and the Biological Board (Johnstone 1977: 104).

The Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands (the 'MacLean Commission') was convened by Order in Council in 1927, at the request of the Minister of Marine and Fisheries. On the management of the lobster fishery the Commission found, like its predecessors, that regulations were neither obeyed nor enforced in many districts:

The impression left on our minds in certain districts was that there was an utter lack of observance of the existing lobster regulations and little individual or community support of their enforcement... Law observance and law enforcement have in some localities been shamefully lax; breaches of the regulations have too frequently been ignored, and violators have too often been allowed to go unpunished because of powerful influences. In one district a fishery guardian was killed in 1926, apparently because his enforcement of the law was considered too strict, and his assailants were never brought to justice (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands 1928: 12).

⁸ Since Knight's time, many effective techniques for hatching and raising lobsters have been employed in North America and Europe, including one in St. Andrews, New Brunswick. However, all efforts to use artificially hatched lobster to enhance natural populations have been suspended in North America, since there has been no evidence there that these efforts have been effective. Experimentation continues in the New England states, where hatched lobsters are being released with micro-tags or genetic markings so that their movements and mortality can be studied. Several European hatcheries, however, report significant enhancement of stocks of the European lobster, *Homarus gammarus*, using hatchery-reared stock (Nicosia and Lavalli 1999).

Fishermen informed the Commissioners publicly that in some districts the catch during the closed season was at least sixty percent of the open season catch. They told them privately that in one area these illegal landings equaled the legal catch. Part of the problem seems to have been that waters in the districts in eastern Nova Scotia and the Gulf of St. Lawrence were iced over at the beginning of the fishing season. Thus, fishermen felt justified in fishing beyond the close of the season. The Commission recommended later season openings in these areas (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands: 10). In 1927 minimum size limits only applied in the Bay of Fundy and the Halifax area. The MacLean Commission recommended reinstating minimum size limits in all lobster fishing districts. The Commissioners saw no easy way to enforce the prohibition on landing berried lobsters and recommended instead an educational campaign, "...to which school and press and pulpit should each contribute its share" (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands 1928: 13). They heard testimony about the new system in force in Maine, where fishermen sold berried lobsters to dealers. Maine fisheries officers in turn purchased the lobsters, punched a hole in a tail flipper, and released them. These marked lobsters could not be landed or sold. The Commissioners could not see the fairness in paying fishermen a bonus for "merely obeying the law." They noted that in one Atlantic Canadian fishing district fishermen took an oath before the local fisheries overseer to return berried lobsters, and that in another, a local fishermen's union required its members to promise they would not land berried lobsters, and fined or suspended violators. "We believe that the fishermen should take the matter in their own hands. The taking of such an oath or a pledge would doubtless have a restraining influence" (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands 1928: 13).

The MacLean Commission report briefly describes the structure of fisheries management at the time (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands 1928: 82-5). Below the Minister of Marine and

Fisheries was a Deputy Minister of Fisheries. The ministry developed fisheries policies and regulations in its Ottawa office. An Overseer in each fisheries district was charged with enforcement. Beneath the Overseer were Fishery Officers and part-time Fishery Guardians, often retired or unemployed fishermen, were at the bottom of the structure. While the Commissioners believed that all of these district-level staff were underpaid, they felt the Guardians were so poorly paid that they were unlikely to make a serious attempt at enforcement (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands 1928: 84). In general, the MacLean Commission found the Department of Marine and Fisheries inadequately structured to meet its responsibilities. It recommended that Fisheries become a separate ministry, with individual Directors for the Atlantic and Pacific regions. The Commission found the process of collection and storage of fisheries statistics to be unreliable and in addition recommended the establishment of a Fisheries Intelligence Branch to assemble and distribute information on market trends. It felt there should be a scientist on the staff of the Department to form a liaison with the Biological Board. Despite these shortcomings, the Commission allowed that "...service was incomparably better than it was a few years ago" (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands 1928: 84).

A free-standing Department of Fisheries was established in 1930, but the Commission's recommendations concerning regulation of the lobster fishery were not acted upon until 1934, in the depths of the Great Depression. At that time the Department prescribed a three and one-sixteenth inch carapace length limit⁹ for all of the Bay of Fundy and western Nova Scotia to Cole Harbour, with the exception of Charlotte County, New Brunswick, which had a 3.5 inch limit. The rest of the Maritimes remained free of size restrictions. The Department redrew district boundaries to what are almost exactly their locations today, and prohibited fishermen for the first time from fishing in more than one district per year (DeWolf 1974: 24).

⁹ Carapace length replaced overall length as a measure of lobster size. It is an easier and more accurate measure of lobster maturity.

Localized informal resource management systems began to evolve again in Atlantic Canadian lobster fishing communities at this time, systems such as were described by Acheson (1988) in Maine and recalled to me by older fishermen in the course of interviews. With the decreasing pressure from outside capital through the canneries, and in the absence of serious enforcement efforts by the state, fishing communities seem to have regained some of the sway they had held over allocation of the resource seventy-five years earlier (McMullan et al. 1993: 123). Supply, demand, fishing areas and fishing technology had stabilized, and licenses now identified those with a legal right to exploit the resource. The MacLean Commission had encouraged local autonomy by recommending that the federal government assist in the establishment of fishermen's cooperatives and appoint a coordinator for this purpose. (Canada, Royal Commission Investigating the Fisheries of the Maritime Provinces and the Magdalen Islands 1928: 81). The government responded in 1929 by appointing Father Moses M. Coady, director of the St. Francis Xavier University Extension Department, to the coordinator's post. In 1930 a large-scale promotion of cooperatives began (Calhoun 1991: 22-3). By the end of 1930, almost 150 fishermen's organizations had been founded in the Maritimes (Grant 1934: 106). Lobster fishermen formed the first co-ops, and "...became the backbone of the cooperative movement" (Calhoun 1991: 22). They were assisted by government-subsidized transportation of lobsters from Nova Scotia to Boston (Grant 1934: 133).

Though lobster fishermen were able to develop localized regimes of allocation in an environment of state *laissez faire* toward management, and to reap greater profits through the cooperatives, lobster fishing remained a poor man's occupation for another forty years. It was hard work, seasonal work, and the market, particularly during the Depression, was limited. Lobster fishing was an occupation of last resort, and during the Depression increasing numbers resorted to it. In 1929, 8,514 persons held lobster licenses in Nova Scotia. By 1939 there were almost 11,000 licensed lobster fishermen in the province (plus the uncounted crewmembers working on their boats), but the landed value of Nova Scotia lobsters had fallen from \$2.2 million to \$1.6 million. The wharf price for lobster fell to 9.5 cents a pound in 1940 (DeWolf 1974: 24-5).

Even under these circumstances lobster remained the Maritimes' most valuable fishery: "In 1939 eastern Canada as a whole was the land of the lobster, not the cod, when it came to earning income" (Bates 1944: 52). According to a 1939 survey, lobster accounted for over half the fishing income in one out of three Maritimes fishing districts. In Southwest Nova Scotia, where lobsters commanded the highest prices in the Maritimes, the fishery was even more dominant. Its dominance was really only challenged in Digby County, with a more diversified fishery in groundfish, herring and scallops (Bates 1944: 59, 160).

During World War II the landed value of lobsters rose sharply. Exports of canned lobster plummeted when Britain placed a wartime embargo on the product, but live exports to the United States increased, surpassing total canned exports by 1939 (Bates 1944: 59, 95). The number of licensed lobster fishermen fell to about 7500, so individual incomes improved (DeWolf 1974: 25). World War II marked the beginning of major government intervention in the Canadian fishing industry. Under the War Measures Act, the Wartime Prices and Trade Board, which included an Atlantic Fisheries Directorate, closely supervised the Canadian economy (Apostle et al., 1998: 62-4; Barrett 1984; Kimber 1989: 76-8). A Wartime Fisheries Advisory Board (including representatives from major fish processing firms) was created to consider ways of increasing production and streamlining production methods, and the immense commercial possibilities of the industry, given a sufficient transfusion of capital, became apparent. In 1941 the federal government began subsidizing the construction of fish processing facilities and large trawlers (Calhoun 1991: 28). The Report on the Atlantic Sea Fishery, compiled by Stewart Bates in 1944 as part of a Nova Scotia provincial Royal Commission on Provincial Development and Rehabilitation, supported the Advisory Board's contentions that both fleets and processing facilities were undercapitalized. Bates suggested mergers of some of the major east coast companies as a solution (Kimber 1989: 80). The Bates Report rejected the findings of the MacLean Commission by recommending the development of a modern dragger fleet as part of a plan to "...meet the *main need of the fishing industry - to raise its income by greater efficiency and higher productivity per man in all its methods and branches*" (Bates 1944: 106; italics in original). Yet Bates wished to address the separate needs of the inshore fishing communities along with the

requirements of the industrializing offshore enterprises (Bates 1944: 123). While he recommended an offshore shift from schooners to draggers and from salt fish to frozen fillets, he argued that the landscape of impoverished inshore fishing communities should be rationalized in a manner that anticipated the 'growth pole' strategy taken in Newfoundland two decades later (Matthews 1976: 2). There were too many part-time fishermen in too many tiny fishing communities relying on small, inefficient processing facilities (Bates 1944: 124). Bates advocated community-by-community assessment. In some communities the existing system of part-time fishing, combined with a seasonal round of other occupations, might be viable. Perhaps a half a dozen communities in Nova Scotia could be developed into "fishing centres" to serve the surrounding area with small-scale modern fish plants (Bates 1944: 124).

While Bates advocated different solutions for the problem of underdevelopment in offshore and inshore fisheries, the goals were similar. He was proposing a state management regime that concentrated on economic (and, indirectly, social) development, a radical shift from past regimes that had focused on resource conservation (Barrett 1992: 61). He did, however, make an exception of the lobster fishery, which he found to be "near maximum exploitation" and requiring special attention toward conservation (Bates 1944: 116). Following the War, while fleets and processors in other fishery sectors were receiving government grants and loans to expand production capacities, the lobster fishery continued to see restrictive regulations aiming to reduce capacity and effort with the intention of conserving the resource. A major restriction in 1945 prohibited the deployment of any vessel or gear in more than one lobster district in a given year (Scott and Tugwell 1981: 27). This virtually eliminated the possibility of lobster fishing becoming a mobile year-round occupation. Extensive studies of trap lath spacing conducted by Wilder from 1943 to 1946 had shown that a minimum gap between laths would allow seventy-five percent of undersized lobster to escape while reducing damage from handling with no reduction in legal sized catch (Wilder 1965: 27). The Department of Fisheries announced minimum lath spacing regulations in 1948, but fishermen's opposition and enforcement difficulties caused them to be rescinded in 1955 (Wilder 1965: 27.). The Department increased minimum size limits in the early 1950s. Market

lobsters were limited to a 3 3/16-inch carapace length, while the canner lobsters caught in the Southern Gulf were limited to 2 1/2 inches. According to DeWolf, the restriction on cannery was a conservation measure recommended by the Fisheries Research Board, but the increase in market size was in reaction to an identical size increase in Massachusetts, where most live lobsters were shipped (DeWolf 1974: 26).

Overall lobster landings increased only slightly in the Maritime Provinces between the end of the War and 1960, and a mild decline began in Southwest Nova Scotia in the mid-fifties (Pringle et al. 1983: 12-3). This was more than offset by an increase in landed value, and so fishing effort increased. This trend continued into the early seventies, when total catches had dropped to around sixty percent of the 1960 high, but total landed value had doubled (DeWolf 1974:26). By 1959, seventy-five percent of Maritimes fishermen engaged in lobster fishing, and the Department of Fisheries was echoing Bates' concern that there were too many lobster fishermen earning too little money (Barrett 1992: 74; DeWolf 1974:26).

In the past the Department of Fisheries had tried to limit resource exploitation through minimum size, seasonal and gear design restrictions, but in the mid-1960s Canadian fisheries management took an important new turn with the implementation of effort restrictions. Effort restrictions began with a limit to the number of traps that could be set by one fishermen. The introduction of effort restrictions responded to a new paradigm for fisheries management articulated by the Canadian economist H. Scott Gordon in 1954 (Gordon 1998). Gordon argued that in the past, the goal of fisheries management had simply been to obtain the largest sustainable catch without formal consideration of economic and social costs or net economic yield: "...practically all control measures have, in the past, been designed by biologists, with sole attention paid to the production side of the problem, and none to the cost side" (Gordon 1998: 26). Gordon pointed out that scientists treated the behaviour of fishermen as an exogenous element in their analytic models (Gordon 1998: 21). He used the Canadian lobster conservation program as an illustration of this problem:

The method of control here is by seasonal closure. The result has been a steady growth

in the number of traps set by each fisherman. Virtually all available lobsters are now caught each year within the season, but at much greater cost in gear and supplies. At a fairly conservative estimate, the same quantity of lobsters could be caught with half the present number of traps. In a few places the fishermen have banded together into a local monopoly, preventing entry and controlling their own operations. By this means, the amount of fishing gear has been greatly reduced and incomes considerably improved" (Gordon 1998: 27).

Gordon argued for a new model of "bionomic equilibrium" for the fisheries with a goal of a "socially optimal manner of exploitation" rather than a simple maximization of sustainable catch (Gordon 1998: 29). This model broke new ground by formally including the economic well being of fishermen, as well as the conservation of stocks, in the fisheries management decision-making process. Government studies dating at least as far back as the Prince Commission of 1898 had expressed concern for the socioeconomic conditions in fishing communities, but Gordon produced the first model to formally incorporate these concerns, in essence concerns about distributive justice, in the fisheries management process. It was a utilitarian model of distributive justice and it assumed a state property regime. As such, it was driven by a preconceived outcome, the 'greater good', rather than procedural 'fairness'. Gordon conceived the greater good as "... a socially optimal manner of exploitation, which is, presumably, what government management policy aims to achieve or promote" (Gordon 1998: 29). The maximum number of fisherman possible (and no more) would fish with the minimum effort possible to obtain a sustainable (though here unspecified) livelihood through exploitation of the resource. Though the overall welfare of fishermen as a group was central to this model of distribution, considerations of distributive fairness among individual fishermen or among individual fishing communities were not.

J. B. Rutherford supervised the first systematic study of Canadian lobster fishery economics for the Fisheries Research Board in the mid-sixties (Rutherford et al. 1967).

The findings of Rutherford and his colleagues supported Gordon's arguments:

It is evident that the lobster fisherman's reward for his labour and capital investment in the fishery is low in spite of the comparatively high prices received for lobsters, because the input of labour and capital in the fishery is much in excess of what would be required to take the limited annual catch at lowest cost (Rutherford et al. 1967: x).

Through a survey of over five hundred license holders, the Rutherford study discovered a very wide range of fishing effort and income. The mean income of lobster fishermen was low, but some fishermen, particularly in Southwest Nova Scotia, were doing quite well. Others certainly were not. Over twenty percent of the respondents reported landing less than a thousand pounds of lobster (under \$500 worth) a year (Rutherford et al. 1967: 57). The Rutherford survey also found that, "Among fishermen there is considerable resentment toward what they regard as unfair intrusion by newcomers" (Rutherford et al. 1967: 31). Long-term fishermen were unhappy that new entrants, often 'moonlighters' with regular jobs who fished in their spare time, were moving into already overcrowded fishing areas. Rutherford and his colleagues offered several suggestions toward "management of the fishery to increase the net economic yield", including the idea of allotting management of defined fishing areas to fishing organizations made up of all the lobster fishermen in each area (Rutherford et al. 1967: 98 - 100). They appear, however, to have favoured the idea of limiting entry to the fishery as the best solution. They clearly disapproved of the idea of limiting traps: although such a plan might increase equity of catch among fishermen, "...this reduction would be accompanied by a considerable sacrifice of economic efficiency in the fishery" (Rutherford et al. 1967: 91).

Despite the reservations of the Rutherford team, the Department of Fisheries initiated implementation of effort control in the lobster fishery in 1966 by limiting the maximum number of lobster traps that could be used by a single license holder in what is now LFA 25 - the Northumberland Strait between New Brunswick and Prince Edward Island. By 1968, trap limits had been introduced in every Maritimes lobster fishing district (DeWolf 1974: 26). In the same year, Fisheries Minister Robichaud also announced that lobster fishing licenses for the Maritimes in 1968 would only be issued to persons who had held them in 1967, creating Canada's first limited entry fishery (Parsons 1993: 171).¹⁰ In addition, he ordered all lobster boats to be registered as such.

¹⁰ Both Calhoun (1991:32) and DeWolf (1974: 26) differ here, saying limited entry to the lobster fishery began in 1967.

The Department of Fisheries had pursued separate developmental policies for the offshore and inshore fisheries since the end of the War, but by the mid-sixties these policies began to collide. While the inshore fisheries were to be rationalized to provide a better livelihood for committed full-time fishermen, the emphasis for the offshore was on modernization to increase efficiency of capture and processing. Modernization was to be realized through increased capitalization, and the Department encouraged mergers and acquisitions of smaller fish companies by larger ones to achieve this goal. National Sea Products (NSP), formed shortly after the War by merger of the four largest independent fish companies in the Maritimes, was the masterwork of this process (Kimber 1989: 75). With the help of government subsidies, NSP continued to expand and diversify, and grew to be the largest fish harvester and processor on the eastern seaboard (Barrett 1984: 86). But in the 1960s, NSP's program of expansion through diversification also began to impinge on many of the traditional inshore fishery resources such as herring and shellfish (Barrett 1984: 88 - 91). NSP moved rapidly into the lobster industry in 1964. By acquiring the three largest lobster companies in the Atlantic provinces, it established a virtual buyer's monopoly in the Gulf lobster fishery and a strong position in the Scotia-Fundy region. NSP also began a prolonged, though ultimately unsuccessful, campaign to become Canada's first offshore lobster harvester (Barrett 1984: 90). The NSP monopoly later faced organized resistance in the Gulf from the Maritimes Fishermen's Union (MFU), and, in the face of competition from the numerous local buyers, the company was never able to build a loyal base of fishermen-suppliers in the Scotia-Fundy region (Calhoun 1991: 93-94; Barrett 1984: 90). But the real reason for NSP's gradual retreat from the lobster industry seems to have been the alarming continuation of a decline in lobster landings that had begun about 1960, and was approaching an all-time low by the mid 1970s (Barrett 1984: 90; Pringle and Burke 1993: 97).

Despite the increasing complexity of fisheries management, the Trudeau government merged the Department of Fisheries, a freestanding ministry since 1930, into a new Department of Fisheries and Forestry (DFF) in 1969, "...in a move designed to consolidate the administration and management of Canada's renewable resources" (LeBlanc 1984: 243). The new Minister, Jack Davis, made several important revisions to

the limited entry licensing policy in response to a continuing decline in lobster landings. He attached licenses to vessels rather than fishermen: the sale of a licensed lobster boat meant transfer of fishing privileges to the new owner (Parsons 1993: 171). He established two classes of lobster licenses based on the number of traps to be used. Davis set *minimum* trap limits ranging from fifty and one hundred traps for each lobster district. Fishermen who had not fished the minimum number of traps during 1968 were assigned a nontransferable "Class B" boat license, and were not allowed to exceed the minimum trap limit in the future. "Class A" license holders were permitted to transfer vessel licenses and fish the maximum trap limit, but an individual or company could only hold one license (Parsons 1993: 171). As a result of these new regulations there was a reduction of 8.7 percent in the number of licensed lobster vessels between 1968 and 1972, but effort actually increased: the number of traps being fished rose by 5.6 percent, and landings continued to decline (Parsons 1993: 171). A further development, ominous to many fishermen, was the Department's 1971 decision to allow a Southwest Nova Scotia firm to convert six vessels from the failing swordfish fishery to pursue the previously unexploited offshore lobster stocks (Canada, DFO 1988: 198). Although the number of offshore vessels was frozen at eight in 1975, offshore catches amounted to about thirteen percent of the total landings in the Scotia-Fundy region by 1978 (Canada, DFO 1989: 22). Concerns over the effects of offshore fishing on inshore stocks motivated inshore fishermen to hold demonstrations in Shelburne in 1977, resulting in assaults, property damage and threats of violence (McMullen et al. 1993: 131). The government responded by placing boat quotas on six of the offshore vessels and trap and seasonal limits on the other two (Canada, DFO 1988: 198).

Phase Four: Expansion (1971 - 2001)

The Department of Fisheries and Forestry was integrated, along with six other governmental bodies, into the Department of Environment in June of 1971, a move severely criticized from the beginning by members of the fishing industry (LeBlanc 1984: 244). The strategy was to integrate management of all of the nation's natural resources to tackle the reduction of environmentally unacceptable practices more efficiently through a single agency. Jack Davis became the new Minister, but retained direct ministerial

authority over Fisheries and Forests as well (LeBlanc 1984: 244). In March 1974, the year the decline in lobster landings finally bottomed out, Roméo LeBlanc, a first-term Member of Parliament representing the Northumberland Strait district of New Brunswick, requested the formation of a task force to investigate the lobster fishery (Parsons 1993: 172). The Lobster Fishery Task Force was convened almost immediately. Its chair was economist Gordon DeWolf, who was just completing an economic assessment of the lobster fishery. The Task Force was the first investigation of the lobster industry to rely heavily on prolonged consultations with industry members - fishermen, buyers and processors - as well as fishery managers (Parsons 1993: 172). The Task Force Report, issued in March 1975, indicated that conditions in the fishery had not changed much since the Rutherford report eight years earlier, despite the new regulatory measures.

Like Gordon and the Rutherford research team, the Task Force regarded maximum net economic yield as the ideal, but argued that such a socially and geographically complex fishery could not be managed on a purely economic basis. This was at least partly because fishing strategies were not "...dictated by economic criteria alone" (Parsons 1993: 172). Still, the Task Force was guided by the central concept of economic viability, rather than, for instance, resource conservation, during the course of its investigations. It found that in order to make sense economically, the lobster fleet would have to be reduced by twenty-five to fifty percent. In addition, it recommended that existing trap limits be reduced. The Task Force found fault with the attachment of limited entry lobster licenses to vessels, noting that Class A vessel prices had been abnormally inflated because of this. But the central message of the Task Force Report was one certain to appeal to the majority of licensed fishermen: that the fishery needed to be 'professionalized.'

...the lobster fishery should be reserved for commercial fishermen in regions where such fishing will provide a reasonable standard of living to those engaged in it... Persons fully employed in other occupations should be eliminated immediately (Parsons 1993: 172).

The minority Trudeau government had been defeated on a motion of no confidence shortly after the Task Force began its investigations. On the eve of the resulting federal election in July of 1974 the government attempted to win over critics in the fishing industry by creating the new position of Minister of State for Fisheries within the Department of Environment. It also promised to establish a freestanding fisheries department if reelected (LeBlanc 1984: 244). The Trudeau government was reelected by majority and Roméo LeBlanc was appointed Minister of State for Fisheries. An independent fisheries department would not, however, appear for another five years. Prime Minister Trudeau offered LeBlanc as "a friend of the fishermen" (Calhoun 1991: 100). Representing a riding with many lobster fishermen, LeBlanc, with his working-class roots, gained immediate and lasting popularity with the inshore sector. He described "...a fundamental redirection in the government's policy for fishery management and development" in a policy document published in 1976:

Although commercial fishing has long been a highly regulated activity in Canada, the object of regulation has, with rare exception, been protection of the renewable resource. In other words, fishing has been regulated in the interest of the fish. In the future it is to be regulated in the interest of the people who depend on the fishing industry. Implicit in the new orientation is more direct intervention by government in controlling the use of fishery resources, from the water to the table, and also more direct participation by the people affected in the formulation and implementation of policy (Canada. Dept. of the Environment, Fisheries and Marine Service 1976: 5).

In December of 1975, LeBlanc responded to the Lobster Task Force Report with a promise to revise licensing regulations: "We want only to honour the demands of these legitimate fishermen by excluding a minority with no real stake in the lobster industry" (Parsons 1993: 173).

In the following months local advisory committees were convened and fishermen were consulted extensively. In September 1976 LeBlanc announced three new categories of lobster licenses to replace the two license classes established in 1968. The new licenses were now to be issued to fishermen rather than placed on vessels. Category "A" (full-time) licenses were issued to fishermen who were dependent on the lobster fishery and had no other full-time employment. They were transferable with permission of the Department. Category "B" licenses were issued to fishermen who had other regular employment, but had been fishing lobsters since 1968. "B" license holders were allowed

to fish only thirty percent of the trap limit. These licenses were non-transferable, and expired with the holder's retirement. Category "C" licenses were issued to newer entrants to the fishery with other regular employment. Conditions were similar to Category "B", except that holders were required to retire from the fishery within two years (Scott and Tugwell 1981: 30).

During consultations, fishermen had also suggested a government-funded voluntary buy-back program to reduce the number of full-time licenses, despite the fact that the Task Force had already specifically rejected such a plan. This program was tested experimentally in Prince Edward Island beginning in 1977, and was so successful that it was extended to the rest of the Maritimes for a period of three years. The Lobster Vessel Certificate Retirement Program required voluntary participants relinquishing Category "A" licenses to cease fishing within three years. Participants were paid an average (tax-free) of \$3,284 in compensation (Parsons 1993: 174). The timing of the program was propitious because lobster landings had experienced a fifteen-year decline. Many fishermen were ready to retire or move on to other fishing occupations, especially since Canada had claimed jurisdiction to the 200 mile limit that year, and the Canadian offshore groundfishery was expected to expand rapidly. In New Brunswick and Nova Scotia the program eliminated 1,569 licenses, 22.6 percent of all lobster licenses held at the time. Most of the licenses retired were from Nova Scotia districts (Parsons 1993: 174).

Lobster landings rebounded significantly after the completion of the license buy-back program, and many fishermen credited Roméo LeBlanc with saving the fishery (Calhoun 1991: 179). A later study by the DFO found that the increase was more likely caused by "...a widespread phenomenon due to environmental changes; the exact mechanisms, however, are unknown" (Canada, DFO 1989: 26). In any case, license reduction unquestionably furthered the Lobster Task Force goal of increasing net economic yield. Between 1978 and 1987, aided by the increased landings, the combined net incomes of the reduced number of lobster captains and crews rose in each district by at least 250 percent (in LFA 34) to as high as 700 percent in LFA 32 (Parsons 1993: 174).

LeBlanc's term of office continued until 1982, when he was appointed Minister of Public Works. The Fisheries Department went through two more transformations during this period. In 1976 LeBlanc became Minister of a freestanding Department of Fisheries and the Environment. Finally, in response to the expanded responsibilities of the government in fisheries and ocean management following the declaration of the 200-mile limit, the Department of Fisheries and Oceans (DFO) was created in 1979, with LeBlanc as its first Minister (LeBlanc 1984: 245). Toward the end of his term in office, Roméo LeBlanc took two more steps that would affect the lobster fishery. The first was the creation of the Eastern Fishermen's Federation (EFF) in 1979. In trying to implement his policy of regulation "in the interest of the people who depend on the fishery", LeBlanc acknowledged the difficulty of responding to an unorganized aggregation of individual fishermen, a problem that continues to plague DFO managers today. As early as 1976 he had initiated a pilot program to encourage fishermen to form associations, sending nine community service officers to designated areas of New Brunswick and Nova Scotia (Calhoun 1991: 103). There was a scattering of local representative associations, along with a fledgling Maritime Fishermen's Union (MFU) which strove to represent inshore fishermen in all the Atlantic provinces, but many fishermen were still not represented in 1979. To remedy the situation, LeBlanc proposed to gather individuals and associations under the single umbrella of the EFF. As an enticement, he granted the EFF what was essentially an endowment fund, enabling the organization to operate indefinitely without collecting dues (Calhoun 1991: 104). LeBlanc had a friendly relationship with MFU leaders, and later declared that he had believed at the time that the MFU "...would end up at the top of the pile because they had the best leadership (Calhoun 1991: 105)." But the MFU, leery of government-sponsored representation of labour, did not join the EFF, and Calhoun argues that LeBlanc's initiative undercut the young union's membership drive, since membership in EFF-sponsored associations was free. LeBlanc later admitted he had acted in haste in establishing the EFF, and wished he could "...redress the situation" (Calhoun 1991: 106). The major problem with the EFF was - and is - that it encouraged the formation of a loose federation of locality-based organizations rather than the unification of inshore fishermen as a single voice across the region based on class

interests, as the MFU sought - and still seeks - to do. Thus it highlighted the already too obvious regional differences between fishing communities - not to mention the inherent conflicts between gear groups - rather than distilling the common concerns of a clear constituency. The constituency sought by the EFF, composed of organizations of inshore, midshore and offshore fishermen as well as the cooperative movement, was too broad to have many common concerns. Some of these groups, such as the MFU and the midshore herring seiners, were actually engaged with each other in open, class-based conflict over access to resources (Calhoun 1991: 104). Both the Maritimes Fishermen's Union and the Eastern Fishermen's Federation continue to operate today, but neither can be said to be representative of all inshore fishermen across the Maritimes, a purpose which both had been founded to accomplish.

In April 1981 LeBlanc took another step that was to have a more lasting positive effect on the inshore fishery by creating the 'Gulf of St. Lawrence Fisheries' district with an office in Moncton, New Brunswick. Previously, the entire Maritimes Region had been managed as a single fishing area, parallel to the Quebec and Newfoundland Regions on the Atlantic coast. Fishing conditions and industry practices were quite different in the Gulf from those in what became the 'Scotia-Fundy Fisheries' and the new regional division allowed DFO policy to address these differences.

During Roméo LeBlanc's tenure as Fisheries Minister the concept of a 'social fishery', a fishery managed for the benefit of fishermen rather than simply to approach an economic or conservation target, was always central in management considerations. Yet though he had hoped to involve fishermen in the management process itself through representative organizations (Canada, DFO 1981: 59), LeBlanc's efforts to promote the EFF more likely had the effect of splintering the efforts of fishermen to develop genuine representative structures on their own. In terms of Charles' management paradigm triangle discussed previously, fisheries management policy had gravitated to some degree from the rationalization paradigm to the social/community paradigm, but management itself continued under a state regime. As argued earlier, the state management regime seems best suited to follow the conservation paradigm, and in the years that followed LeBlanc's

tenure, fisheries management gradually shifted in that direction. But for the time being, the concept of a 'social fishery' captured the spotlight. In January of 1982, Prime Minister Trudeau appointed a Task Force on Atlantic Fisheries. Its report, "Navigating Troubled Waters: A New Policy for the Atlantic Fisheries" (the "Kirby Report"), released the following December, reflected LeBlanc's social concerns. The three priorities of Atlantic fisheries policy were to be 1) an economically viable fishing industry; 2) a fishing industry that maximized employment; and 3) that fish in Canadian territorial waters were to be harvested and processed by Canadian firms (Canada, Task Force on Atlantic Fisheries 1982: 186).

In the spring of 1982, DFO management in Southwest Nova Scotia mounted a campaign of strict trap limit enforcement, with only two weeks prior notice given to the industry (Kearney 1984: 6). The trap limit had originally been imposed to improve the net economic yield for fishermen, but according to Kearney it was now suddenly being enforced for conservation purposes. This was because the DFO had correctly surmised that fishermen were not likely to accept the increased size limit now being recommended by DFO scientists as a conservation measure (Kearney 1989:95). Historically, enforcement of fisheries regulations had been lax, and many fishermen in Southwest Nova Scotia had routinely exceeded the area's 375-trap limit since its imposition in 1968, particularly in the late spring as the season ended (Kearney 1984: 6). In western Shelburne and southern Yarmouth counties, fishermen had traditionally fished lobster further out to sea, often using islands as temporary fishing stations. In the 1970s, many fishermen took advantage of rising lobster prices and government loans to finance larger vessels that allowed them to fish a wider area directly from their home ports. Fishermen's debts increased dramatically during the period, and this was coupled with rising interest rates and increasing fuel costs (McMullan et al. 1993: 127; McMullan and Perrier 1997: 30-1). As Kearney points out, while trap limits had been established to improve the net economic yield for fishermen, "...the real capital cost of fishing effort had greatly increased" (Kearney 1989: 90). As a result, many fishermen felt (and continue to feel) compelled to exceed the trap limit.

In response to the 1982 enforcement campaign, fishermen held meetings to protest the sudden enforcement of trap limits, and the manner in which this enforcement was being carried out. With the fishing season ending shortly, neither the new enforcement regime nor the protestations carried on long enough to capture much public attention (Kearney 1984: 7). DFO hoped to head off further conflict in the following season by establishing a consultative process with fishermen, as had been advised by a panel of DFO scientists and managers convened that very spring (Pringle et al. 1983: 83). Industry Advisory Committees had been created to obtain input and feedback from fishermen in other sectors as early as 1974 (Calhoun 1991: 33), but until now, lobster fishermen had not been formally consulted about management policy on a routine basis.

Prior to the 1982-83 lobster fishing season in Southwest Nova Scotia, the DFO called meetings with fishermen to inform them that it planned to continue strict enforcement of trap limits. At the same time, it announced its plans to initiate a consultative process through the establishment of fishermen's advisory committees. While many other lobster fishing areas were already represented by local associations, no association effectively represented the diverse range of fishing communities and local fishing strategies coexisting in the very large and productive lobster fishing area of Southwest Nova Scotia. Two fishermen's organizations were recruiting members in the area at that time, but their memberships were localized. These were the MFU, whose main constituency was in Clare on the French Shore of Digby County, and the Bear Point-Shag Harbour-Woods Harbour Fishermen's Association (BSWFA) in western Shelburne County (Kearney 1984: 7). The BSWFA had been formed during an earlier effort by the EFF to organize all of Southwest Nova Scotia, but had evolved independently (Kearney 1989: 91). Because there was no general organization of fishermen, the DFO asked each Southwest Nova Scotian fisherman to vote for a representative for his statistical district at the same time that he renewed his lobster license. Since there was no nomination process preceding this election, many delegates were elected to the new advisory committee with very few votes, raising questions as to the 'representativeness' of the committee (Kearney 1984: 7).

In March 1983, before the advisory process could get underway, a confrontation developed between fishermen in western Shelburne County, now represented by the BSWFA, and DFO enforcement. The DFO had just issued plastic identification tags to replace the aluminum tags formerly used to identify the traps of licensed fishermen. In an open letter, the BSWFA complained that the new tags were too weak to withstand ocean conditions and that loss of these tags would leave many traps vulnerable to seizure (Kearney 1984: 7). By mid-April, it was reported that 240 untagged traps had been seized, and fishermen suspected that many more had been cut off or destroyed by enforcement officers. The BSWFA continued to argue that the new tags were too fragile, but also that the DFO was being unusually slow in supplying replacement tags for those lost, and that officers were hauling trawl gear carelessly and returning it to the water in a tangled ball (McMullen et al. 1993: 131). A group of fifty to seventy-five Shelburne County fishermen occupied the DFO regional office in Yarmouth in protest, and were met by an RMCP riot squad. In order to placate fishermen, the DFO declared a four-day moratorium on enforcement and offered every fisherman twenty-five replacement tags, but conditions continued to deteriorate (Kearney 1984: 9). On May 11, two leased fisheries patrol boats were pursued by about a hundred fishermen near West Pubnico, and were ultimately burned and sunk. Thirteen fishermen were charged on fifty-two counts, including nine counts of piracy (McMullen et al. 1993:131).

The events of May 11 captured national attention and were characterized as "lobster wars", "piscatorial piracy" and "coastal communities on trial" in the press (McMullen and Perrier 1997: 31). In this atmosphere, the District 4A Working Group (precursor of the LFA 34 Advisory Committee) held its first meeting a month later. The DFO invited representatives of the BSWFA and MFU to join the elected members (Kearney 1989: 91). After several meetings, and under pressure from Ottawa as well as the public to find a solution, regional DFO officials tentatively imposed a "flexible" trap limit. Fishermen were allowed to use up to a hundred traps over the 375-trap limit in the spring of the 1983-1984 season if they had deployed correspondingly fewer traps in the previous fall (Kearney 1989: 92). This concession was not enough to satisfy the BSWFA, but it also

raised criticism from fishermen in other parts of Southwest Nova Scotia who felt it would stimulate increased trap usage in already overcrowded areas.

It became apparent that the BSWFA and the fishermen involved in the "Pubnico Affair" represented only one segment of the lobster fishing community. Within LFA 34 (at the time designated 'Lobster District 4a'), western Shelburne County is a district notorious even today for a certain proportion of its fishermen who routinely exceed trap limits by more than trivial numbers. This prompted the DFO to commission researcher John Kearney to conduct a district-wide, independent survey of fishermen's opinions on lobster management (Kearney 1989: 92). Kearney found that more than half the respondents were satisfied with government regulatory measures as they stood and did not wish for higher trap limits. Trap limits were the regulation most cited as important to protecting the stocks, and seventy-eight percent of the respondents preferred the new plastic tags to the old aluminum ones (Kearney 1984). While the majority of respondents were satisfied with existing regulations, only about a quarter felt that the DFO was fair and consistent in their enforcement, and about two-thirds felt fishermen should have greater responsibility for management of the lobster fishery.

In his report, Kearney recommended implementation of a co-management regime. He proposed an independent "Inshore Fishermen's Management Council" made up of fishermen who would assume responsibility for developing future lobster management plans in the district. While these plans would be subject to the approval of the government, the Council would nevertheless be acting in a managerial capacity, rather than simply as an advisory body (Kearney 1984: 73-6). However, in the District 4A Working Group meetings that followed, attention remained fixed on solving the issue of trap limits rather than on revising the decision-making process itself. A nomination process was, nevertheless, put in place for the election of Working Group representatives, and non-elected members such as the MFU and BSWFA delegates lost voting privileges (Kearney 1989: 93). In the end, the Working Group was able to ratify a plan allowing 375 traps in the fall and 400 in the spring, but only by majority: the two elected members representing BSWFA fishermen refused to join in consensus. As Kearney points out,

unresolved differences between groups of fishermen within LFA 34 prevented their delegates from speaking as a unified voice vis-à-vis the government. These conditions continue to exist, and make it difficult for the present-day LFA 34 Advisory Committee to develop beyond an advisory function.

Following the Pubnico Affair, the DFO appears to have abandoned its efforts to strictly enforce trap limits. A study published in 1989 reported that fishery officers had laid twice as many charges for total lobster fishery violations between 1984 and 1987 as in the period a decade earlier, but had obtained only one conviction during this time for a trap limit violation in LFA 34 (Canada, DFO 1989: 72-3). LFA 34 fishermen surveyed for this study cited "inadequate trap enforcement" more frequently than all other criticisms of DFO enforcement combined (Canada, DFO 1989: 107). Despite the DFO's difficulties with enforcement and the DFO scientists' concerns about overfishing, lobster landings by weight in LFA 34 tripled between 1980 and 1988. Landed value grew even more because the wharf price for lobster had increased by twenty percent (Canada, DFO Commercial Data Division 1980a; 1980b; 1988a; 1988b).

The rapidly changing conditions in the Scotia-Fundy lobster fishery prompted Fisheries Minister Tom Siddon to commission a major study in 1988 to look at "...the biological, licensing, management, marketing and enforcement aspects of the lobster fishery" (Canada, DFO 1989: 1). According to the study's final published report, "The Scotia-Fundy Lobster Study was initiated in April of 1988 in response to the controversy surrounding the Minister's intention to issue additional offshore lobster licenses" (Canada, DFO 1990b: 1). Because of the dramatic increase in landings, the Department was under some pressure from both the inshore and offshore sectors to issue new licenses in the limited entry fishery. In addition, under the new American Lobster Fishery Management Plan, U. S. fishermen were prohibited from landing lobsters with a carapace length under 3 1/4 inches, and a recent amendment to the Magnuson Fishery Conservation and Management Act prohibited the import of lobsters under this limit (Parsons 1993: 389). The study would therefore consider responding with a matching increase in the Canadian "market" size minimum that had stood at 3 3/16 inches since

1930. Like the Lobster Task Force of 1975 (Canada, Department of Environment, Fisheries and Marine Service 1975), the Steering Committee of the Scotia-Fundy study (under the direction of DFO Regional Director-General Jean-Eude Haché) followed a process of extensive consultation with industry, management and science. To the relief of most inshore fishermen the study concluded that no new licenses, inshore or offshore, should be issued, and that a minimum size increase was not justified at this time (Canada, DFO 1990b: 3; 5). In fact, though the study did advocate improvements in enforcement, biological research and communications between management and industry, its recommendations were essentially an invitation to stay the course: "Many of these recommendations call for no change to the existing management system" (Canada, DFO 1990b: 1).

The DFO was saddled with a new burden of responsibility in May of 1990 as a consequence of the Supreme Court of Canada decision in *Regina v. Sparrow*. The Court ruled that aboriginal Canadians had a right of priority over non-aboriginals in fishing for "food, social and ceremonial purposes" which had not been extinguished by subsequent fisheries regulation or the Constitution Act of 1982 (Newell 1993: 174-6). Furthermore, the Supreme Court did not rule out the possibility that some First Nations communities could claim priority in certain commercial fisheries if they could prove a historical precedence (Allain and Frechette 1993). Because the DFO retained overarching responsibility for resource management and conservation, it was compelled to become involved in the process of assimilating this newly legitimized fishery into the existing management structure (Newell 1993: 177). In June 1992, Fisheries Minister John Crosbie announced the "Aboriginal Fisheries Strategy" (AFS) as an approach to meet this challenge. Conceived as a seven-year program, the AFS remains in force today as a method of anticipating, accommodating and often circumventing Aboriginal claims of rights to fish commercially as well as for food. The program is funded annually to allow the DFO to assist individual First Nations in purchasing commercial fishing licenses and gear, to develop fish processing facilities and to establish community-based management and enforcement plans (Allain and Frechette 1993). The AFS is the basis for the numerous Fishing Agreements negotiated annually with individual First Nations in

Atlantic Canada and elsewhere. While the DFO moved positively to establish a position for aboriginal Canadians in the fisheries, it appeared reluctant to charge any aboriginals caught violating existing fisheries regulations while cases for the further extension of aboriginal fishing rights were pending in court (Allain and Frechette 1993.). This reluctance was of growing concern to LFA 34 lobster fishermen, particularly those operating in St. Mary's Bay, where a large 'native food fishery' was developing in the closed summer season, apparently unchecked by DFO Enforcement. Increasingly, unlicensed non-aboriginals took advantage of lax enforcement to poach during the summer months (*Atlantic Fisherman* 1998: 4). The pending court case relevant to the Atlantic fisheries was an appeal to the Supreme Court by Donald Marshall, a Mi'kmaq who had been convicted of landing and selling eels without a license in 1993. In September of 1999 the Court found Marshall not guilty on all charges, affirming the treaty right of the Mi'kmaq, Maliseet and Passamaquoddy First Nations to fish to secure "a moderate livelihood" (Canada, Supreme Court of Canada 1999a). The immediate reaction of the lobster industry to the Marshall Decision varied across the Atlantic Provinces, but in Southwest Nova Scotia it was relatively measured and conciliatory. According to an LFA 34 Advisory Committee member from the St. Mary's Bay area,

There's new fishermen on the block and they have an entitlement. Room has got to be made and I don't know how that's going to be done. I haven't the slightest idea how the process will start. There's so many questions without any answers. We won't have any answers until there is dialogue (*Sou'wester* 1999a: 10).

The DFO appeared to have been caught with no contingency plan for a Marshall acquittal. Adding to the confusion, a new Fisheries Minister, Herb Dhaliwal of British Columbia, had taken office only a month earlier. A month later, with the lobster season approaching, hundreds of lobster boats converged on Yarmouth harbour as fishermen sought to express frustration at what they considered the government's failure to clarify the ramifications of the Marshall Decision. A number of these vessels set about dragging the harbour on October 15, hauling and destroying untagged traps as they found them. The fishermen's demonstration lasted for eight days and by the end involved over 600 vessels. During this time and without DFO participation, representatives of LFA 34 fishermen's associations met with leaders of the two First Nations within the district and

came to an agreement on fishing protocol for the upcoming season. Chief Deborah Robinson of the Acadia Band received a standing ovation from over 800 fishermen when she announced that she and the fishermen's representatives had agreed to ask the DFO to purchase six existing licenses for her band, and pledged that Acadia Band members would not fish out of season (*Sou'wester* 1999b: 2, 22-3). The DFO immediately agreed to this request, and permitted the Acadia Band to begin fishing the equivalent of six licenses while the DFO sought six existing licenses to purchase.

The powers of the DFO to regulate a commercial aboriginal fishery were not clearly specified in the Marshall Decision, and the West Nova Fisherman's Coalition, a small association centered in Yarmouth County, petitioned the Supreme Court for a clarification. The Court responded on November 17 with a clarification that clearly upheld the DFO's power to regulate all fishing activity. According to Fisheries Minister Dhaliwal,

The Supreme Court's November 17 clarification says that 'the paramount regulatory objective is the conservation of the resource. This responsibility is placed squarely on the Minister and not on the aboriginal or non-aboriginal users of the resource.' Moreover, the Court went on to say that authority 'extends to other compelling and substantial public objectives which may include economic and regional fairness, and recognition of the historical reliance upon, and participation in, the fishery by non-aboriginal groups' (Dhaliwal 2000).

On the basis of this clarification, the DFO launched a vigorous enforcement campaign in LFA 34 during the summer of 2000. While members of First Nations within Southwest Nova Scotia kept their pledge not to fish commercially during the closed season, the Indian Brook Band from Shubenacadie in central Nova Scotia did not accept the DFO's right to regulate the aboriginal fishery, and began setting traps in St. Mary's Bay late that summer (*Sou'wester* 2000: 20). To the satisfaction of most licensed non-aboriginal fishermen, enforcement officers shut down commercial summer fishing activities in St. Mary's Bay, seized boats and gear belonging to members of the Indian Brook Band and laid charges. No serious attempt was made to pursue an out-of-season aboriginal commercial fishery in LFA 34 in 2001 or 2002.

The DFO could legitimate its strategy for the integration of an aboriginal fishery into the existing lobster fishery in LFA 34 with the November 17 clarification of the Marshall Decision: "...the paramount regulatory objective is the conservation of the resource. This responsibility is placed squarely on the Minister..." (Canada, Supreme Court of Canada, 1999b: 3). Arguments for DFO ascendancy in fisheries regulation were justified by the notion that integrated conservation management was best delivered by a single authority, and these arguments were made not only by government but by the licensed lobster fishermen themselves. As the 'conservation paradigm' came to dominate resource management in a fishery to which entry was now limited, a new solidarity grew between license-holding fishermen and local-level DFO management. License holders found they could use the conservation argument to defend "their" lobster fishery against the intrusion of new entrants, whether from the offshore, inshore or aboriginal sectors. First Nations could only enter the lobster fishery with limited entry licenses. Under its own limited entry policy the DFO could not create new licenses: it was obliged to buy existing licenses for the First Nations from voluntarily retiring non-native fishermen using AFS funds. This benefited non-aboriginal lobster license holders in two ways. It increased the value of their lobster licenses; and it removed seasoned competitors from the fishing grounds, replacing them with inexperienced First Nations people without access to the bank of local knowledge that non-aboriginal fishermen shared.

The Supreme Court's clarification of the Marshall Decision underscored the recently redefined role of the DFO in fisheries management. In response to the cod stock failures of the early 1990s, the Canadian Parliament passed the Oceans Act of 1996, which redrew the mandate of the DFO in Part II: Oceans Management Strategy (Canada, Statutes of Canada 1996: 15). This new strategy was to be based on sustainable development, integrated oceans management, and the precautionary approach. The fundamental responsibility of the DFO was for conservation: sustaining the resource and the ecosystem surrounding it, rather than sustaining the livelihoods of individual participants in the fishery, or the state of the fishing industry as a whole. The Oceans Act of 1996 formally ended the era of 'social fishery' policy begun by Roméo LeBlanc in 1975. Its Ocean Management Strategy was a far cry from the policy priorities of the

Kirby Report: economic viability, maximum employment, and Canadian control of Canadian fisheries (Canada, Task Force on Atlantic Fisheries 1982: 186).

In recent years, licensed lobster fishermen (or at least their elected representatives) have had more input into the management process than ever before, through the LFA Advisory Committees and other advisory bodies. This could rightly be seen as a gradual movement toward co-management of the resource, but it cannot be construed as a movement toward community management under the social/community paradigm. With the conservation paradigm firmly in place, the range of discourse is severely restricted. There is only secondary consideration of the fairness of distribution. And the concerns of community members who do not hold lobster licenses (and this includes crew members, who outnumber captains) are barely relevant under the present regime: the interests of these individuals are not formally represented at the table.

The LFA 34 Advisory Committee evolved from the District 4a Working Group in the 1980s. The Committee has fourteen elected members from the eleven designated 'port clusters' in LFA 34. The three largest port clusters (located around Clark's Harbour, Woods Harbour and Wedgeport) are each represented by two members. Alternates are also elected for each member. Only these elected members can vote on resolutions, but local representatives from DFO management, enforcement and science also attend meetings, as do representatives from fishermen's associations, and other interested members of the public. In LFA 34 three meetings are usually called every year, one before the start of the lobster season in the fall¹¹, one in the middle of winter when fishing is slow, and one after the season is closed. Additional meetings may be called if necessary, as they were at the time of the Marshall Decision. A locally based DFO manager and an elected fishermen's representative jointly chair the meetings, and they are open to the public. I attended eight of these meetings during the course of research. Attendance by elected representatives at those meetings was spotty, unless there were important items on the agenda. While some elected representatives could be adversarial, the general atmosphere was cordial, and participants usually directed any animosity

¹¹ This is also before deer hunting season starts, or not many fishermen would attend!

toward 'Ottawa' rather than toward the local DFO management team. The meetings were usually quite productive. They allowed local managers to test the waters on proposed regulatory changes, and fishermen to bring up problems occurring in local areas. Typical agenda items included changes in gear regulations and protocols for opening day of the season. DFO scientists frequently presented stock reports and other practical information. During the meetings I attended, there was inevitably some discussion on DFO's policy toward the aboriginal fishery. Occasional issues arose around gear conflicts with other fisheries, and particularly with the scallop fishery. While fishermen's representatives were only empowered in an advisory capacity, they showed themselves capable at times of using the forum provided to lobby successfully for or against regulatory changes.

DFO Fisheries Management Today

The Department of Fisheries and Oceans has a wide range of responsibilities, which fall into seven major program areas (Canada, DFO 1997: 7-10). Along with Fisheries Management, these responsibilities also include the Canadian Coast Guard, Fisheries and Ocean Science, Industry Services (including fish inspection and harbour maintenance), the Policy Sector (involving economic policy analysis and strategic planning), Corporate Services (concerned with internal Department management), and the maintenance of nine research facilities. Recently a eighth program area, Oceans and Environment, was created (in response to the Oceans Act of 1996) to coordinate the activities among all program areas toward an integrated oceans and coastal management approach. The Fisheries Management program, which absorbed about fourteen percent of the total annual departmental budget in 1995-1996, is further subdivided into five branches: Resource Management; Licensing; Conservation and Protection ("Enforcement"); Aboriginal Affairs (overseeing the AFS); and International (covering Canada's international fisheries and trade policy).

While the Fisheries Minister has ultimate and absolute authority over the management of fisheries (for instance, only he has the authority to revoke or suspend a license without due legal process), management procedures are developed and executed as much as possible at the regional level. A Regional Director-General heads the Maritimes Region.

Under him is the Regional Director of the Scotia-Fundy Fisheries. The Director of Resource Management reports to the Regional Director, and works with a panel of Senior Policy Advisors who are assigned the various commercial species. The Director of Resource Management and his advisors are responsible for developing an integrated management plan for all species in the Scotia-Fundy sector. The interface between DFO management and the fishermen occurs at the 'Area' level and below. For lobster fishermen it usually occurs at the LFA level. There are three Areas in the Scotia-Fundy sector. LFA 34 is within the Southwest Nova Scotia Area, which extends around the coast from Sambro (near Halifax) to the Minas Basin at the head of the Bay of Fundy¹². Under a recent departmental restructuring, each fishing area is now administered by an Area Director who reports directly to the Regional Director-General. Under the Area Director is a Chief of Resource Management for the area, directly responsible for the implementation of management policy. There is also an Area Chief of Enforcement who reports to the Area Director. There is a small fleet of enforcement vessels in the Southwest Area¹³, and 86 land-based enforcement officers, about 35 of them stationed within the LFA 34 boundaries.

Distributive Justice in Contemporary Fisheries Management

The management of the Canadian fisheries involves an important division of labour as a consequence of the conservation paradigm entrenched in the Oceans Act of 1996. The Fisheries Minister's office in Ottawa, with advice from regional scientists and managers, is responsible for providing conservation targets for each fish stock within each fisheries Region. These conservation targets must be quantified, and, presumably, measurable. For instance, at the time I conducted my study, the target for the lobster fishery in the Maritimes Region was to double the existing level of lobster egg production in each of the LFAs over a four year period. It is the responsibility of Regional and Area managers, working as closely as possible with the fishermen themselves, to come up with harvesting plans and regulations to meet these targets. If a harvesting plan does not achieve the

¹² The others are Southwestern New Brunswick and Eastern Nova Scotia.

¹³ Most of these are small vessels such as Zodiacs. According to one DFO manager there was only one vessel in the area really capable of hauling trawls properly, though another was about to go into service in the 2001-2 season.

conservation target in a timely fashion, the Fisheries Minister's office is prepared to impose its own "default" plans and regulations to achieve the target. In the case of the Maritimes Region lobster fishery, at the time I conducted my study the default plan included an increase in the minimum size limit, and the imposition of a maximum size limit.

With this division of labour, the DFO is, in effect, pursuing two kinds of justice at once. The Oceans Act prioritizes utilitarian justice, the greatest sum of satisfactions that can be achieved for all Canadians through ocean management. The strategy flows from concepts of sustainable development, integrated oceans management, and application of the precautionary principle. The Fisheries Minister's office in Ottawa operationalizes this strategy with quantified conservation targets and the threat of default conservation measures. A subsidiary and contingent system of justice, a procedural system of justice akin to Rawls (1993: 93) "political construction of justice as fairness", is in place at the regional level and below. Conservation, the 'just outcome' or 'good', is predetermined and predefined, but the procedures by which it is to be accomplished are negotiable. According to one area manager, "Whatever you do, you have to be fair. You have to try to be fair, anyway... At least appear to be fair! I don't know if we're always fair, but we try to appear to be fair."

Area managers are responsible for negotiating annual conservation harvesting plans with lobster license holders in each of the LFAs. Regional managers must either approve or reject these plans in the context of a regional Integrated Fisheries Management Plan, forwarding accepted plans to Ottawa for final approval or rejection. A major part of this exercise in procedural justification is to convince fishermen of the validity of the conservation target itself, a target that the managers themselves did not set, and with which they are not always comfortable. As an area manager put it,

Well, you know, on this conservation target level, it's very confusing. And this is one example where not everybody [in the Department] is comfortable with the message we have to give. Therefore, sometimes the message is not always consistent. And the fishermen are keen enough to see that there are [management] people who don't understand or don't agree, and they're able to take advantage of that.

According to a regional manager, the biggest single problem with the DFO was that,

We do not do a very good job of organizing ourselves to put forward a program that people understand. It's bureaucratic. We talk all kinds of neat stuff about partnering and co-management, the open and wonderful world of business - which is all well and good, and the government is moving in that direction. It is better than it used to be, no question about it, because of the downloading of authority and approval levels and things like that. But at the end of the day, it's a political process. Our boss is a political animal, and what the Minister says, we do.

Another area manager cited the isolation of high-level management:

As you remove yourself from the ground level, the model becomes more important than what's actually happening on the ground. So as you move from here and go to the Ottawa level, people are making decisions on this lobster fishery that have never looked off the end of a wharf! They have never talked to lobster fishermen face to face. Now sure, theories and models and concepts are good to a certain extent, but I find that a lot of senior decision-makers have had very little hands-on operational experience.

Fishermen may question the validity of conservation targets set in Ottawa, but fisheries managers believe that they accept the need for conservation measures and generally support the efforts of local DFO officials to enforce them:

The capitalization required to get into a commercial fishing operation and maintain it is tremendous, especially in the lobster fishery. And that has changed the attitudes of the fishermen themselves, and there is a much broader acceptance that the underlying principles of regulations are appropriate, that these things need to be adhered to, much, much more.

The problem for regional and area managers as they try to administer procedural justice as fairness at the LFA level is not philosophical, but structural. The DFO lobster management structure was designed to negotiate fairness with license-holding constituents of each LFA as a group, but license holders in LFA 34 do not have the representative structure necessary to negotiate as a corporate body. As a regional manager put it,

There's no forum in which you can bring this thing together, to deal on behalf of the industry with those in authority and be able to make decisions, to carry an agenda forward, without dealing with *all* the license holders or their representatives *all* of the time on an issue. And we just spend a terrible amount of time going back over things that should not be gone back over... There's no mechanism in which to bring a consensus from that discussion or a couple of differing points of view from that discussion forward to the DFO. To say, "Here. We as an industry are recommending this." So you end up with some component [of the industry] coming up and saying [to

the DFO managers], "Look, those guys over there are doing such-and-such. That's not right. We don't agree with it. You've got to do something about it."

There are several localized fishermen's organizations in Southwest Nova Scotia, but none that represent LFA 34 as a whole. The LFA 34 Advisory Committee is structured as a sounding board for the DFO, a point for the transfer of information and opinion, but it is not empowered as a co-management structure. Fishermen's representatives to the committee are able to express their concerns and negotiate practical regulatory details, but their attempts to alter the course or focus of federal fisheries policy have been spectacularly unsuccessful. Regional and local fisheries managers sympathize with the frustration of fishermen's representatives, but they also wonder if lobster fishermen would be willing to accept the responsibilities that co-management entails. In the words of an area manager,

I sympathize somewhat with the industry, because at the end of the day they have no say. I would like to see the fishermen have a little more say than just sort of the 'lobby' thing. But having said that, they should have some accountability as well. I would not mind sharing some accountability, responsibility, for letting them have some decision-making authority. Now, what form that would take, I'm not sure. [Should we say,] "Now guys, we're going to put you in a room. This is all the information we have. You have your fish plants, you have your vessels, you have your investment, you have your livelihood at stake here. You make the decision. But remember, if you make the wrong decision, we won't be there with a bailout or a buyout. You're on your own!"

While the majority of their Advisory Committee representatives argued for a more active role in policy-making, many of the lobster captains I interviewed were not so certain this was a good idea. These captains certainly felt the government should pay more attention to the advice offered by fishermen, but they had more faith in the DFO's capacity to deliver an appropriate and fair lobster management regime than in the capacity of the fishing community to do so. Interview respondents discussed three problems in implementing LFA-level co-management of the lobster fishery. Some said fishermen were too busy, too apathetic, or too jaded to commit the necessary time to develop policy. As one captain put it, "A lot of fishermen know what they're talking about, [but] a lot won't be bothered to try. It takes a lot of time away from your business." Others described fishermen as too greedy, too independent, or too opinionated to be able to concur or compromise on fisheries policy:

I don't know about these guys who want to take it over, and then will probably start doing things for themselves. I wouldn't mind if it was somebody who was going to be honest about it. I do think fishermen *should* know what should be done, I'll put it that way. I guess the main thing is to conserve it, and we all should know that. But I don't know about letting fishermen do away with the DFO.

Another captain added, "We're just like everybody else. We're greedy. You can't put the fox in charge of the hen house!" The third obstacle was a function of the great variation in income, wealth and capitalization among lobster license holders in LFA 34: captains believed that concerns of the wealthier and more powerful fishermen would prevail:

We'll always end up with somebody who'll get up and speak, trying to say it's for everybody. The only kind of fisherman the government's going to listen to is somebody that's got money. And he's the biggest crook in the fleet. And he only wants to go for himself. I've seen that done.

Retributive Justice

Regional and area managers are most concerned with distributive justice and trying to deal fairly with a disparate group of lobster fishermen who are usually unable or unwilling to negotiate their concerns as a corporate body. But managers are also charged with responsibilities of retributive justice, deploying fisheries officers to enforce regulations. There are two basic types of violators: unlicensed poachers who operate mainly during the summer months when the fishery is legally closed; and licensed lobster fishermen who disobey regulations during the regular fishing season. The fisheries managers interviewed believed that off-season poaching was now only a minor problem, though they admitted that organized poaching rings still existed. They believed that most offenses were committed by licensed fishermen during the fishing season. Managers differed on the seriousness of this problem, and on whether it had a significant impact on the stocks. One manager was certain that trap limit violations were on the rise in midshore locations. Fishermen can now use state of the art positioning systems to locate traps they have set without marker buoys, and fisheries officers have little hope of catching them in the act in the broad expanse of the midshore waters. The manager suggested that some lobster fishermen opposed scallop dragging on midshore lobster fishing ground because the draggers pulled up these illegal traps in their nets. From a conservation standpoint, managers were more concerned with the illegal landing of

undersized and egg carrying lobsters. Some dealers were willing to buy 'short' lobsters because they could say they came from the Gulf Region, where the minimum size is much lower. Some fishermen had discovered ways to remove eggs from berried females without being detected. Others routinely cooked and ate illegal lobsters on board their vessels.

DFO Enforcement is not manned or equipped to systematically monitor the vast expanse of ocean that comprises LFA 34, and relies largely on tips from lobster fishermen to make arrests. Managers report that in recent years peer pressure has become increasingly important in controlling violations:

To me, the biggest factor is this whole sort of switch in attitude [toward conservation], very broad-based in the industry. Now, they're delivering. They actually believe in what they are saying [about conservation] and they'll defend it. And they'll put peer pressure on the guy who is not doing it, which is more important. So the DFO doesn't have to come in with a big stick. It will be your partner or the guy fishing next to you who will take you to task.

Licensed fishermen interviewed usually expressed sympathy and appreciation for the fisheries enforcement officers. They generally approved of regulations currently in force, and claimed to be law-abiding themselves. As one skipper put it, "What's the problem? It's just the same as the RCMP on the road. If you're doing something illegal, that's what they're there for. Go straight, you won't have any problem." But most captains felt that DFO Enforcement was inadequately funded and relied too heavily on informants:

What I see of it, when I see them coming, most times they've been told to come. Someone has reported something and they'll come. Once in a while you'll see them shoot through, but mostly it's when somebody has called to say someone is doing something wrong. Years and years ago, when I first started, Fisheries was there [on the wharf] all the time when you came in to sell. But I don't think I've ever come in to sell and seen them standing there on a lobster boat in the last ten years. You might see them in a few weeks time [just before the season starts] walking around the wharf, looking at the traps. That's probably another case of someone on the phone saying somebody's got more pots on the wharf than he should have.

Several skippers insisted that more fisheries officers were necessary because legitimate fishermen feared retribution from law-breakers:

I know they could improve. They could have more patrol boats. We've had a lot of problems with poachers in the summertime and all that. They say they don't have the money, so we have to help them out. But am I going to hang out on the wharf

all night to see if someone's fishing illegally? And if you rat on somebody and they find out who it is... DFO is supposed to do that job.

Treaty Justice: The Aboriginal Fishery

The Aboriginal Affairs Branch of the Department of Fisheries and Oceans oversees the Aboriginal Affairs Strategy (AFS), a program designed to support aboriginal treaty rights of access to fisheries, to increase aboriginal involvement in fisheries management, and to encourage aboriginal entry into the commercial fisheries (Canada, DFO 1997: 9). In Atlantic Canada these treaty rights are defined in the Sparrow and Marshall decisions of the Supreme Court of Canada. At the same time the Court's clarification of the Marshall decision places responsibility for resource conservation squarely on the Fisheries Minister. As discussed earlier, the Sparrow decision of 1990 was somewhat ambiguous in its definition of an aboriginal 'food fishery', and its assertion that aboriginals may also have the right to fish commercially based on historical treaties. According to an area manager,

The Marshall decision was a godsend in Southwest Nova Scotia, because we'd been dealing with an illegal commercial fishery since 1992, through Sparrow. It just got progressively worse and worse, and we could not seem to convince the powers that be that this was a festering social, conservation, and enforcement problem. It placed everybody in limbo. The Marshall decision brought it up as a national issue, and we put the resources into it. We got the clarification we needed. I think this summer [2001] has been an example: pretty quiet. It's just been a godsend because people have been hoping for something like this for eight years.

Representatives from the Fisheries Minister's office have negotiated fishing agreements with nearly all of the Atlantic Canadian First Nations under the AFS, based on the principle that the DFO is the final arbiter in issues of resource conservation and remains responsible for enforcement. These agreements include procedures to be followed in a food fishery, and the transfer of existing limited entry commercial lobster licenses to some of the bands, to be held communally. Two Atlantic First Nations, the Esgenoôpetitj First Nation near Burnt Church, New Brunswick and the Indian Brook Band near Truro, Nova Scotia, have rejected DFO jurisdiction over aboriginal fisheries. However, a court decision in July of 2002 upheld DFO jurisdiction in convicting two members of the Esgenoôpetitj First Nation of fishing lobsters out of season.

The DFO's dealings with First Nations reflect the two-tiered system of justice that it has applied to the regular commercial lobster fishery. The primary goal remains the same: resource conservation, operationalized through measurable conservation targets. The secondary goal of justice as fairness is approached in negotiating fishing agreements with each First Nation. The difference is that both levels of justice are administered by the Fishery Minister's office in Ottawa: DFO regional and area managers are only involved in the enforcement process.

Some of the lobster captains interviewed were openly hostile to aboriginal entry into the lobster fishery, but most of their objections were based on abuse of the 'food fishery' prior to the Marshall decision and the formally negotiated fishing agreements with the DFO:

If the natives would just do what they said they would do and just fish five or six traps [for food] and not make a big stink on TV, I think everybody could live with that. I say if they want to fish [commercially], they should buy a license like us. They've got more money than us, they're always giving them money like crazy. As far as the Indians setting conservation standards, a guy told me he was watching them, and they were sorting lobsters for size on the wharf, just throwing them off the wharf if they came in too small. And a lot of them were damaged from being piled on top of each other. If we were to do that, our licenses would be suspended. They're above the law, and nobody says anything... The Indians catching lobster is no big number, it's just an issue. And last summer there were a lot of white people involved, so it was quite bad. It wasn't as bad this year [2001, following the Marshall decision].

A DFO regional manager scoffed at non-native captains' objections to the aboriginal fishery:

We have a very large LFA [34], which reports landings of fifteen to sixteen thousand tons a year. On a good day, twenty to thirty percent of those landings are under-reported, so there's probably another five thousand tons coming out of the water that nobody knows about. There's illegal fishing going on by fishing over the trap limit. There are all these violations that these guys [the license holders] will readily admit are going on, but nobody will deal with, or deal with effectively. And yet the potential [for the aboriginals] to take out even a couple thousand tons of lobster out of that pot is somehow the undermining of the world, the collapse of mankind as we know it! I don't want to call it racism, but I'm convinced it is nothing more than a case of 'us' and 'them'.

Since the Marshall decision, most of the fishermen I interviewed had come to accept an aboriginal presence in the lobster fishery, provided the boundaries of a 'food fishery' were well defined and the aboriginal commercial fishery was subject to the same regulations as

the non-native fishery. Some even expressed a sense of solidarity with the native communities, and a conviction that, with the Marshall decision, justice had been done at last:

A lot of bad things were done to these people. They were just pushed out of the way. And our [fishing] communities here have a lot more in common with the natives, with what's being done to their economies and communities, than with a lot of other groups. I think there's an acceptance that there's going to be a native fishery.

Summary

Since Confederation, the Canadian fisheries have been considered a state property, and as such, subject to federal regulation. From the earliest days, federal administrators have been aware that lobster stocks must be protected from overexploitation, and regulations to limit lobster fishing effort have been in place since 1873. Until the 1950s, the federal model of justice in the lobster fishery was essentially utilitarian: to provide the greatest sum of satisfactions to the owners of the resource, the people of Canada as a whole. This was to be accomplished through conservation measures. Justice in distribution of access was not a federal concern, since the fishery was open to anyone willing to follow the rules. Members of the fishing community dealt with issues of fair distribution informally as they arose. Procedural fairness was not an issue since the government rarely consulted fishermen on the regulatory process. However, federal enforcement was usually ineffectual, and retributive justice was likely to come from the community members themselves.

Conceptions of justice in the Canadian fisheries changed after the Second World War, when the fisheries came to be seen as an engine for regional development. Like other fisheries during this period, the lobster fishery was subjected to federal policy based on the rationalization paradigm. Federal managers believed that too many undercapitalized fishermen were trying to eke out a living from the lobster resource. In order to maximize the yield for fishing effort, thus improving the incomes of lobster fishermen, the federal government sought to reduce total fishing effort, first through trap limits, and later by limiting entry into the fishery. This strategy was intended to provide the most lobster

fishermen possible with an acceptable standard of living. Fishermen forced out of the lobster fishery by limited entry could find wage work in the rapidly industrializing groundfish, pelagic and scallop industries. It was an economic version of utilitarian justice, based in the concept of regional development: exploiting the region's resources in a way that would produce the largest sum of satisfaction for regional residents. It could also be viewed as an exercise in social engineering, planned and executed at the highest levels of government, featuring little consultation with the people whose lives were to be 'improved'.

Procedural justice as fairness became an important factor in Canadian fisheries management when Fisheries Minister LeBlanc took office in 1979. LeBlanc promoted the formation of fishermen's representative bodies, and vowed to be "Minister of the fishermen, not of the fish". But in 1983, almost immediately after LeBlanc left office, the DFO, concerned with stock conservation, mounted an unprecedented campaign of enforcement in the lobster fisheries of Southwest Nova Scotia. This campaign alienated many lobster fishermen who had previously been won over by the apparent "fairness" of the LeBlanc regime. The DFO responded by creating the Lobster Fishing Area Advisory Committees, which provided license holders with a formal voice in the regulatory process, though only in an advisory capacity.

In the last decade, lobster license holders have been involved in the regulatory process as never before. There is greater transparency in the policy-making process, and fishermen are consulted at every step on the way. Because lobster catches and prices are high, those fortunate enough to own lobster licenses have very little to complain about, especially after what seems to have been a successful resolution of the aboriginal fishery issues. What captains do complain about are issues of authority, and specifically the issue of why the federal government has the authority to set conservation targets unilaterally. The federal government legitimizes its authority on the basis of its monopoly on the production of what it considers to be valid fisheries science knowledge, a topic that will be addressed in the following chapter.

Chapter 5

SCIENTIFIC KNOWLEDGE AS THE BASIS OF AUTHORITY IN LOBSTER MANAGEMENT POLICY

Max Weber argues that in a modern democratic state, a bureaucratic office must legitimate its regulative authority on the basis of knowledge (Weber 1947: 324 ff.). While managerial responsibility may be conferred upon a governmental department from above, authority must also be earned. Management practices are legitimate to the extent that they are founded on technical expertise. Rules will be obeyed without excessive coercion if they can be reasonably argued to benefit the lot of those who follow them. According to Emile Durkheim,

Part of the esteem we accord to principles of hygiene or of professional practice or various precepts drawn from popular wisdom undoubtedly derives from the authority accorded science and experimental research. Such a wealth of knowledge and human experience, by itself, imposes on us a great respect that communicates itself to the bearers, just as the respect of the believer for religious things is also given to priests. However, in all these cases, it is not only out of deference to the authority that is its source; it is also because the prescribed action may very well have useful consequences, whereas contrary behaviour would entail harmful results (Durkheim 1972: 98).

As Durkheim points out, traditional relations of power and respect for scientific knowledge are not, in themselves, sufficient conditions to engender a willing compliance with authority. Those who comply willingly will expect beneficial consequences.

The Birth of Canadian Lobster Science

Canadian fisheries management came into being in an era characterized by an almost unbounded faith in the ability of scientists to harness and domesticate what remained of the 'natural' world for the benefit of its human inhabitants. As Hays (1959: 2) observed, conservationists of the time emphasized economic expansion and possibilities, not retrenchment and limitations:

The political implications of conservation, it is particularly important to observe, grew out of the political implications of applied science rather than from a conflict over the distribution of wealth. Who should decide the course of resource development? Who should determine the goals and methods of federal resource programs? The correct answer to these questions lay at the heart of the conservation idea. Since resource matters were basically technical in nature, conservationists

argued, technicians, rather than legislators, should deal with them... Conservationists envisioned, even though they did not realize their aims, a political system guided by the ideal of efficiency and dominated by technicians who could best determine how to achieve it (Hays 1959: 3).

When the Department of Marine and Fisheries was created in 1868, there were concerns about overfishing in rivers and estuaries but the policy toward ocean fisheries was *laissez-faire*: government regulation could only interfere with the rapid development of what was imagined to be an inexhaustible resource (Parsons 1993: 62). This perception was altered in 1872 when W. H. Venning, Inspector of Fisheries for New Brunswick and Nova Scotia, reported a depletion in lobster stocks which he attributed to overfishing (DeWolf 1969: 49). The first regulatory restrictions on lobster fishing were put into force in 1873, and others followed in the next fifteen years. Lobster catches continued to rise until 1887, as fishermen increased their fishing efforts to meet a growing demand, largely ignoring the new regulations. Fisheries regulations of the time were the product of guesswork and hunches, and fishermen were not likely to obey the whims of uninformed bureaucrats. Prominent academics urged the government to take a scientific approach to fisheries management, and in 1893 the Department of Marine and Fisheries appointed Professor E. E. Prince, a Scottish zoologist with an interest in fisheries science, as its first Commissioner of Fisheries (Johnstone 1977: 24). Dr. Prince exemplified the late Victorian conservationist in his eagerness to apply scientific methods to the resource management and development process. In his Special Appended Report to the 1893 Annual Report of the Department of Marine and Fisheries, he stressed economic development as he argued for the establishment of a federal marine biological research station:

[Properly directed scientific research projects] all end in supremely practical results, and bear directly on the welfare and prosperity of the great fishing industries... Legislation has often been hazardous on account of this lack of ascertained fact and the existence of contradictory opinions. Primarily, a marine research station would be a centre for investigation and diffusion of knowledge. Without interfering with this first and most important work, such a station might also be a school for teaching and for scientific study... (quoted in Johnstone 1977: 26).

But the government of the time was parsimonious. It was only in 1898, after the urgent recommendations of the Royal Society of Canada and the British Association for the Advancement of Science, the collapse of the oyster fishery, and a serious decline in

lobster landings, that Parliament finally appropriated a scant \$7000 to construct and operate a small portable laboratory for a year (Johnstone 1977: 26-7). The Board of Management of the Marine Biological Station was created to operate the laboratory. The Minister of Marine and Fisheries chaired the Board *ex officio*, but unpaid volunteer scientists from Canadian universities staffed the facility. The Marine Biological Station itself was a floating laboratory that could be moved each year to a different location on Canada's Atlantic coast. The federal government also made its first foray into lobster science in 1898 when the Minister of Marine and Fisheries appointed Dr. Prince to head the Canadian Lobster Commission, charged with investigating the recent decline in lobster catches. After collecting data from coastal regions in all of the Maritime provinces, the commission recommended a set of new regulations that was subsequently adopted by the Department of Marine and Fisheries in 1899. The Maritime lobster fishery was divided into six regulatory districts, roughly corresponding to the current Lobster Fishing Areas (LFAs), to take account of varying environmental conditions. The new regulations prescribed closed seasons and minimum size limits by district, and banned the taking of berried lobsters (Canada, Commission of Conservation 1912:54).

The permanent St. Andrews Biological Station (SABS) began operations in 1908, and today it is, among other things, the most important centre for lobster biological research in Canada. In 1912, Parliament created the Biological Board of Canada to replace the old Board of Management. The Board of Management had been a part of the Department of Marine and Fisheries, chaired by the Minister, but the new Biological Board was an independent agency funded directed by Parliament (Johnstone 1977: 77). Still, government fisheries research remained poorly funded, relying almost entirely on the labour of summer volunteers - university professors and their students. For this reason, projects tended to reflect the research interests of the participating academics, rather than the specific needs of fisheries management, and academics tended to focus on the natural history of a species, often a non-commercial one, rather than the population dynamics of commercial fish stocks. Prince's ten-page account of the "habits of the lobster" in the 1898 Report of the Canadian Lobster Commission demonstrates an excellent understanding of the animal's natural history, largely gleaned from European and

American research, but a very rudimentary grasp of its population dynamics in the Atlantic Canadian region (Canada, Department of Marine and Fisheries 1899: 7-21). Professor A. P. Knight of Queen's University directed lobster research at the St. Andrews facility between 1912 and 1922. He was a practical scientist, and spent most of his time trying to breed and raise lobsters in hatcheries to replace the depleted ocean stocks. Fish hatcheries were the linchpin of many early aquatic and marine conservation strategies, but after ten years of research, Knight concluded that lobster hatcheries were ineffectual, and the lobster hatchery program was discontinued (Johnstone 1977: 105).

The Biological Board began hiring full-time researchers in the 1920s, and by the mid-1930s there were no volunteer researchers working at the St. Andrews facility. Budget cuts due to the Depression had moved the new chairman of the Board, A. T. Cameron, to stop paying their transportation costs and providing room and board (Johnstone 1977: 137-8). This move severed what many considered important ties with Canadian universities, but Cameron was not inclined toward 'academic' research, and directed his staff to devote their time to solving the problems of the fishing industry (Johnstone 1977: 140). The Biological Board was reconstituted as the Fisheries Research Board (FRB) in 1937, still retaining its fiscal autonomy, but also still strapped for funds in the continuing Depression. My survey of the contents of the *Journal of the Biological Board* and its successor, the *Journal of the Fisheries Research Board of Canada* between 1934 and 1965 revealed very little published research on the lobster. Nearly all of what was done appears to have been under the direction of either Wilfred Templeman, or D. G. Wilder. It was small-scale research, with direct application to the problems of the lobster fishery. Both scientists conducted small, localized tagging surveys to investigate the migratory patterns of lobsters around the Magdalen Islands and Prince Edward Island (Templeman 1935; Wilder 1963). Both looked at the effects of trap lath spacing on the size of lobsters caught (Templeman 1958; Wilder 1943). Templeman did a two-week study on the distribution of lobster larvae off the shores of Pictou, Nova Scotia (Templeman 1937), and Wilder studied the varying growth rates of lobsters in several fishing regions (Wilder 1953). Little, if any, research appears to have been conducted on the important lobster fisheries of Southwest Nova Scotia.

The Incorporation of Science into the Fisheries Department

The Fisheries Research Board scientists maintained an 'arm's-length' and occasionally even adversarial relationship with the federal fisheries department for many years, but the Board was finally incorporated into the department's structure in 1973 as the "Science Branch" (Finlayson 1994:2). In the early years of the Biological Board, the scientists staffing the research stations were volunteers, university professors and their students taking this opportunity to pursue academic interests. As ties with the universities were broken in the 1930s, research began to focus more on the immediate problems of the fishing industry, but as FRB employees, scientists were at least partially insulated from the practical or political interests of departmental bureaucrats. Ultimately, it was scientists who decided what forms of scientific knowledge were needed to inform the fisheries management process.

When the FRB became part of the federal fisheries department, scientists lost direct control over its research programs and facilities. Federal fisheries policy began to dictate the kind of research that would be done, and the kind of fisheries knowledge that needed to be created. Federal scientists became troubleshooters, problem solvers with little time to increase the depth of scientific knowledge with basic biological research. In 1973, the Canadian government was beginning to consider claiming exclusive access to the 200-mile limit in order to protect and develop the Atlantic Canadian fishing industry, and there was a growing interest in integrating fisheries research with economic development. As Johnstone (1977:308) pointed out, the depth and impartiality of scientific knowledge are threatened when research is restricted to solving the immediate problems of production and management. The difficulties of a reactive style of research and management are well illustrated by the DFO's response to the steep decline in Nova Scotia lobster landings in the mid-1970s:

A detailed review of the American lobster fishery concluded that the reduced catch levels were due to growth (less than optimum yield per animal harvested) and recruitment (insufficient reproductive females) overharvesting (Dow 1980) - a conclusion reached by Robinson (1979) for a portion of the Canadian fishery. Dow (1980) noted, however, that inadequate biological knowledge existed to permit sound resource management. Pringle (1986) suggested that the structure of resource

management agencies can influence the quality of the resource management carried out. An example is the Department of Fisheries and Oceans' science and resource management structure, pre-1980, which consisted of rather disparate groups, each with their own advice on any particular topic. The response from these groups that followed the collapse of the eastern Nova Scotia lobster fishery is illustrative of the effect of the organizational structure. Four somewhat different hypotheses by four individual Departmental scientists from four separate groups attempted to explain the collapse. Neither the fishery manager, nor the industry knew who to listen to (Pringle and Campbell 1987: 18).

Prior to Canada's unilateral assumption of exclusive control of the fisheries up to 200 miles offshore in 1977, an expanding international fishing fleet was seriously depleting fish populations off Canada's Atlantic coast. The International Convention for the Northwest Fisheries (ICNAF) had shown itself powerless to regulate or control the activities of the international fishing effort. During discussions leading to the Third United Nations Convention on the Law of the Sea¹, Canadian representatives successfully argued that depleted fish stocks could best be rebuilt and maintained at historical levels under the rational scientific management of a single state (Finlayson 1994: 20-3). As Finlayson (1994: 27) points out, the ability of Canadian fisheries scientists to deliver the high quality information and advice needed to accomplish this goal was never really in question.

Restructuring and the Canadian Atlantic Fisheries Scientific Advisory Council

The Canadian government took control of the 200-mile limit in 1977, and began renovating and expanding its fisheries management structure to meet the new challenges and coordinate the expected economic windfall. The Canadian Atlantic Fisheries Scientific Advisory Committee (CAFSAC) was formed at that time. Made up of senior government fisheries managers and scientists, CAFSAC set the research agenda for the Science Branch in the Atlantic fisheries, based on the socioeconomic and conservation objectives of regional managers, who themselves presumably reflected Ministerial policy. Commercial fisheries were divided not only into target species, but further into stocks.

¹ The Third United Nations Convention on the Law of the Sea was signed by 119 nations in 1982. It entered into force in 1994, when 60 nations had formally ratified it. As of 2002, neither Canada nor the United States had ratified it, but the 200-mile limit has become customary international law.

According to the 1982 Task Force on Atlantic Fisheries, 'stock' is a

...term used to refer to a population of fish of one species that congregates and/or migrates within a given geographical area. Thus, there may be several stocks of fish for each species. The fish in each stock are genetically distinct, despite the fact that they belong to the same species, and thus each stock can be managed independently, because fish from one stock do not mix with those of another (Canada, Task Force on Atlantic Fisheries 1982: 366).

What Finlayson (1994: 25) calls a "techno-utopian belief in the possibility of successful management of fish populations" was implicit in policy discourse. For example, the agricultural term 'harvest' came to be used interchangeably with 'landings' and 'catch' (Canada, Task Force on Atlantic Fisheries 1982: 23). Starting from the notion that commercial species could be managed independently as individual stocks, the Fisheries and Marine Service (FMS)², through CAFSAC, assigned individual members of its Science Branch to study certain stocks with the goal of producing periodic stock assessments for the more important commercial species.

CAFSAC was responsible for organizing meetings of species subcommittees where Atlantic Canadian scientists reported and discussed their findings and made policy recommendations in what amounted to a peer review process. Committee chairs carried these findings and recommendations to the general meetings of CAFSAC, which were attended by fisheries managers as well as scientists. Here there was further discussion and revision, culminating in the presentation to the Minister of a consensus report consisting of an Advisory Document for each Atlantic fish stock under DFO management (Finlayson 1994: 19). In the case of the Nova Scotia lobster fishery, the Regional Lobster Assessment Coordinator presented the CAFSAC Invertebrate Subcommittee with annual Lobster Summary Sheets summarizing "the known condition of the lobster fishery and stocks" for each of the Scotia-Fundy LFAs (Canada, DFO 1992: 2). After committee review, these sheets were presented to industry representatives at the Lobster Advisory Committee (LFA) meetings.

² In 1979 the FMS, previously a division of the Department of Fisheries and Environment, was expanded and re-established as the free-standing Department of Fisheries and Oceans (DFO).

By the summer of 1992 it was painfully obvious that many of the Atlantic groundfish stocks were in a state of collapse. It seemed that the CAFSAC style of policy-driven scientific research, reviewed and assessed *in camera* by DFO employees, had not produced the quality of scientific knowledge required to inform conservation management of the groundfish stocks properly and unambiguously. At the time, two lines of criticism were leveled at the DFO stock assessment process. One was directed at internal deficiencies and the other at external ones. The first questioned the emphasis on fish population modeling, and deplored the lack of communication within the DFO Science Branch. The second attacked the opacity of the stock assessment and allocation process, and the lack of communication between DFO scientists and participants in the fishing industry. The first criticism had already been articulated in the Independent Review of the Northern Cod Stock (the 'Harris Report') in 1990:

Over the past several decades skilled mathematicians, statisticians and modellers have increasingly become the dominant skilled professionals involved in population dynamics. This was an essential step in moving fishery science from the descriptive and qualitative aspects of ichthyology to the quantitative needs of stock assessments. In many of the world's national fishery laboratories, population dynamics has become the paramount discipline, and frequently greater emphasis is placed on improving the quality of models and mathematical handling of data than on developing an adequate understanding of the response of the population or its elements to environmental facts, life history, and behavioral aspects of the species involved or operational characteristics of the fisheries which may influence the nature of the data used in population assessment. This is unfortunate and has probably contributed to the inability to attain greater certainty in scientific advice (Canada, DFO 1990a: 93).

The Harris Report goes on to question whether the stock assessment group at the St. John's Fishery Centre was taking advantage of the data and information generated there, and among its final recommendations suggests:

... that DFO scientists should pay greater attention to the integration of information from the biological and oceanographic disciplines into the assessment process so that all available data may be employed to reduce the risk of future errors in estimating key population parameters (Canada, DFO 1990a: 153).

The DFO legitimated its authority to manage the fisheries on the basis of superior scientific knowledge, and lobster fishermen were quick to challenge that authority when the scientific basis for it appeared to be feeble:

Industry was puzzled at the lack of coherence among scientists. Their consternation and frustration was particularly evident in 1982/3 during an attempt to implement

CAFSAC advice, which advocated an increase in the minimum legal size of lobsters in LFAs 34, 37 and 38. Fishermen were shocked at our lack of understanding of basic lobster ecology. They refused to advocate minimum legal lobster length changes until we could answer certain basic questions, including adult movement and stock interactions (Pringle and Campbell 1987: 18).

Fisheries Minister John Crosbie acknowledged the second criticism in a proposal for fisheries management reform that was published a few months before the defeat of the Progressive Conservative government in November of 1993 ended his term of office. In his forward to the proposal he wrote,

My objective in proceeding with the initiative is to create a more understandable decision-making system, one that is more open to public view, that gives a more direct voice to those involved in the fishing industry... Two principles are guiding this redesign: openness and shared responsibility. For example, in the area of resource conservation on the Atlantic coast, I intend to increase industry involvement and to open up the process of setting science and conservation priorities by establishing a Fisheries Resource Conservation Council, composed of members from both industry and the scientific community, to hold public hearings on resource assessments and conservation measures and to provide public written advice to me on proposed harvest levels... (Canada, DFO 1993a: *i-ii*).

Under the CAFSAC regime, fishermen had no formal role in the fisheries management process and they were not even invited to attend CAFSAC meetings as observers. The historical disdain of some scientists for fishermen's 'anecdotal' accounts of the biology and habits of lobsters had often been thinly veiled, as the following example illustrates:

An understanding of lobster movements is basic to sound management. Daily, seasonal, and annual changes in the catch have led many fishermen to believe that lobsters are migratory. This conclusion is not supported by the tagging and marking of over 200,000 lobsters at many points in the five Atlantic Provinces over the past 30 years. Over half the lobsters were recaptured, often within 1 - 2 months of release, but over 2000 were at liberty for more than a year. The returns show clearly that lobsters are not migratory. The great majority of those recaptured were found very close to the points where they were released. Although a few moved along the shore quite a few miles, the average straight-line movement was less than two miles. Despite fishermen's persistent belief in a fall offshore migration and a spring onshore migration, a special tagging off southern Nova Scotia gave no suggestion of such movements (Rutherford et al. 1967: 15).

But twenty years later the fishermen's 'persistent belief' in lobster migration was universally acknowledged as scientific fact (Canada, DFO 1989: 9). Cloaked in secrecy, the CAFSAC process for a time concealed the inadequacy of DFO science to provide a

reliable basis for fisheries management. With the collapse of the northern cod stocks in 1992, matters reached crisis level. Fishermen and politicians alike demanded to know how things could have gone so very wrong, and called for transparency and the inclusion of industry representatives in the management process in the future.

The Groundfish Crisis and the Fisheries Research Conservation Council

While Fisheries Minister John Crosbie's plan to reform the fisheries management structure died with his government, he was able to establish the Fisheries Research Conservation Council (FRCC) in December of 1992. He announced the names of the full complement of fourteen members on May 25, 1993. The FRCC was designed to replace both CAFSAC and the Atlantic Groundfish Advisory Council. As Crosbie put it in his announcement,

The reliability of resource assessments and the effectiveness of conservation measures can be increased by integrating both a greater knowledge of the life cycles of the fish and the experience of the fishermen. To achieve this, we need to give persons knowledgeable about the fishery and scientists from outside the government a more effective role in decision-making for fisheries conservation. That is why I have formed the Fisheries Research Conservation Council (Canada, DFO 1993b: 1)

The Council was expected to:

1. advise the Minister on research and assessment priorities;
2. review DFO data and advise on methodologies;
3. consider conservation measures that may be required to protect fish stocks;
4. review stock assessment information and conservation proposals; and
5. make written public recommendations to the Minister on total allowable catches and other conservation measures (Canada, DFO 1993b: 1 - 2).

The fourteen appointed members on the original Council included five academics, five members drawn from the fish processing sector, three representatives from fishermen's organizations (two of whom were fishermen), and one full-time fishing captain, the owner-operator of a midshore groundfish trawler. There were also three ex-officio representatives from the DFO, and one ex-officio representative from each province bordering the Atlantic Ocean. There was no representation from the lobster industry on the original Council, and perhaps this was appropriate because the Council's initial task was to make recommendations for the conservation of Atlantic groundfish stocks. The

recommendations it made in its first report, released only three months later, led to the immediate closure of many of the Atlantic groundfish fisheries (Canada, Fisheries Resource Conservation Council 1993). The creation of the FRCC did lift some of the responsibility for this onerous decision from the shoulders of the DFO, and it did open the decision-making process by conducting regional consultation sessions with 'stakeholders' before making recommendations. However, the creation of the FRCC did not solve the communication problems among DFO scientists or between scientists and fishermen.

The Canadian Stock Assessment Secretariat and the Current Assessment Process

The Canadian Stock Assessment Secretariat (CSAS) was created to fill the gap in coordination of scientific research left by the elimination of CAFSAC. Since 1995, all DFO stock assessment work has been conducted under the auspices of this bureau located within the Science Branch in Ottawa. CSAS also publishes all scientific papers, stock status reports and conference proceedings generated in this process. Central to the operation of CSAS is the Regional Advisory Process (RAP). The Canadian fishery is divided into six regions³, each with a Director of Science who is responsible for appointing a regional RAP Coordinator. Each region conducts its own stock assessments independently, tailoring its work to account for regional characteristics, and to meet specific, regionally-determined needs.

The DFO Science Branch has a number of divisions. Scientists assigned to prepare lobster stock assessments are attached to the Invertebrate Fisheries Division. As was the case under CAFSAC, lobster stocks are assessed on an LFA by LFA basis. Individual scientists are assigned to draft Stock Status Reports (SSRs) for each of the LFAs. The regional RAP Coordinator periodically convenes RAP meetings for each of the commercial species present in his or her region. Scientists present their draft Stock Status Reports as well as research working papers for peer review at these meetings. RAP meetings are open to the public and are attended by DFO managers, fishermen, fish processors and their representatives, and invited peer reviewers. At the RAP meeting

³ The regions are Pacific, Central and Arctic, Laurentian, Gulf, Maritimes, and Newfoundland.

covering LFAs 33 through 41 that I attended in April 2001, peer reviewers from the American National Marine Fisheries Service at Woods Hole, the Maine Department of Fisheries, and the DFO Moncton office were present. Suggestions and criticisms are invited from all RAP meeting participants. In the case of Stock Status Reports, a consensus among participants must be reached on final versions before they are released. The approved SSRs are released directly, with no further substantive editing by the DFO, to the Fisheries Minister, regional DFO management, fishing industry participants and the general public.⁴ Through the Regional Advisory Process, the Science Branch has opened up the stock assessment process to public scrutiny and allowed members of the fishing industry and other interested parties the opportunity to participate in that process.

A Conservation Framework for the Atlantic Lobster

The DFO opened up the processes of lobster stock assessment and management decision-making substantially, but what might be called the terms of reference or rules of discourse, the content, style and goals of these processes were more narrowly defined than they were in the past. This was in a large measure due to the directives of the FRCC. While the activities of the FRCC are presently restricted to making assessments and management recommendations for the Atlantic groundfish stocks, the Council's original mandate covered all the Atlantic fisheries. In September of 1994, Fisheries Minister Brian Tobin requested the FRCC to review the current approaches to lobster conservation and to recommend conservation strategies for the Atlantic lobster. Herbert Clarke, then Chairman of the FRCC, agreed to do this on a one-time basis (Canada, FRCC 1995:1). This review culminated in the November 1995 publication of 'A Conservation Framework for Atlantic Lobster'. Since the strength of expertise within the FRCC lay squarely in the groundfishery, its freshly formed Lobster Working Group relied heavily on the advice of DFO lobster scientists and managers. At the beginning of the process (January 10 to February 7, 1995), ten local public consultation sessions were convened to obtain input from fishermen and other industry members, as well as First Nations people.

⁴ The exception to this rule is the Atlantic groundfishery RAP. Assessments made in groundfish RAP meetings are submitted to the FRCC, which is responsible for producing the final version of groundfish stock assessments, along with management recommendations.

Only two of these sessions were held in Nova Scotia, one in Yarmouth and the other in Cape Breton.

Coming so closely in the wake of the groundfishery collapse, the FRCC report reflected concern that lobster stocks might also be endangered by overfishing. Indeed, there were some parallels. Catch levels were at an all-time high. Most of the lobsters being caught were barely over the minimum size limit. Scientists were estimating that eighty percent or more of all lobsters of legal size were caught each year. Since most of the minimum-size female lobsters caught have not yet attained maturity, scientists estimated that only a very low percentage of females survive long enough to lay eggs. Fishing technology and the range of vessels had vastly improved. Chairman Clarke underscored two points in his introductory letter to the Minister. The first was that even with apparently robust stocks such as the lobster, it was necessary to maintain sufficient long-term recruitment rates and biomass to protect the stocks from the detrimental effects of naturally occurring environmental fluctuations. According to Clarke, "The key elements in achieving this are **good egg production, a reasonable fishing mortality and a biomass composed of several year classes.**" His second point, based on the premises of the first, was "...that there is a resource conservation problem in that **'we are taking too much, and leaving too little'**" (Canada, FRCC 1995: vi. (his emphasis)).

The FRCC proposed what it called a "New Conservation Framework" for the Atlantic lobster fishery. The title was apt. Up to then, lobster management had usually been passive, precautionary, and, occasionally, reactive. Gear, vessel and seasonal restrictions were applied simply to slow down exploitation, rather than to achieve concrete objectives. Occasionally, reactive measures were taken: when stocks appeared to be threatened in the mid-seventies, for instance, limited entry and license buy-backs were introduced. But here the FRCC was proposing a goal-oriented, pro-active framework for conservation, with clearly defined terms of reference, principles, objectives, strategies and even conservation measures or "tool kits" with which to attain these goals. The New Conservation Framework appeared just as the CSAS/RAP system of stock assessment

was getting under way. Seven years later, it was still the compass guiding DFO lobster science.

The New Conservation Framework began with a definition of lobster conservation as a goal-oriented process with two objectives: "Lobster conservation ensures [1] that the fullest sustainable advantage is derived from the resource and [2] that the resource base is maintained." Objective [1] was defined as minimizing resource waste through targeting lobsters of optimal size at the optimal time of year using proper handling procedures. Objective [2] was said to require maintaining sufficient levels of egg production and protecting the quality and quantity of lobster habitat over the whole range of environmental conditions (Canada, FRCC 1995: 26).

The Framework continued with a list of six conservation principles. 'Sustainability' required that a conservation strategy maintain an optimal level of lobster biomass, including a sufficient spawning biomass. The 'Precautionary Approach' required a strategy to err on the side of caution. Under 'Accountability', local lobster fishermen would have an enhanced role in selecting conservation measures appropriate to their areas, with some accountability in achieving conservation targets. Conservation measures were to be 'Consistent', so that fishermen in different LFAs bore them equally. 'Inclusiveness' required that all fisheries - including First Nations fisheries - take place within the same conservation framework. 'Responsiveness' prescribed a reliable feedback system to monitor progress toward conservation goals with a predetermined time frame for review (Canada, FRCC 1995: 26-7).

The Framework acknowledged that the existing Lobster Fishing Areas (LFAs) used as the basis for stock assessments did not accurately reflect the location of stocks, properly defined as distinct populations. To remedy this, the FRCC defined seven Lobster Production Areas (LPAs) within the Atlantic region. Lobsters inhabiting these areas were not classified as distinct genetic stocks, but exhibited common biological characteristics and shared comparable environmental conditions. The Framework also recommended a concrete, step-by-step conservation strategy that has since been adopted as a guide by

DFO management and strongly influences the type of research being done by DFO lobster scientists. The first step of the strategy was to define goals that reflect the stated conservation definition and objectives. The second was to evaluate conservation measures (listed later on in the Framework) in terms of their effectiveness in achieving the goals. The third step was to select the tools appropriate for the area in question. The fourth was to specify a timeframe for achieving these goals, and the fifth was to faithfully monitor progress along the way (Canada, FRCC 1995: 27-8).

Conservation measures or 'tool kits' were proposed in the Framework to address each of four possible conservation objectives. Objectives Two through Four were familiar ones, essentially the same goals as were addressed for a century by 'passive' management initiatives. Measures to reduce exploitation rates were the kinds of gear, season and entry restrictions already in place to reduce effort. Measures to improve stock structure (essentially increasing the proportion of larger animals and mature females) included the same effort restrictions plus protection of select components of the population. Measures to minimize waste focused on harvesting lobsters of optimal size during the optimal season for quality, using proper handling procedures. The centrepiece of the FRCC's conservation program, however, was Objective One - measures to increase egg production - and it was discussed in far greater detail than the other three. The tools proposed for increasing egg production were the usual ones: reducing the exploitation rate, closing fishing areas, minimum and maximum size limits, protection for berried females (including v-notching⁵), and increasing trap selectivity. What was new was the notion that egg production could be used as the key indicator for the health of lobster stocks, and further, that there was a reliable way to estimate egg production using a computer model. This approach to lobster stock assessment was informed by the United States National Marine Fisheries Service (NMFS) contention that if total egg production has fallen below ten percent of what it would be if there were no fishery, then stocks should be considered 'overfished' (Canada, FRCC 1995: 19).

⁵ V-notching has been a voluntary conservation practice in Maine for many years. When fishermen land a berried female lobster, they cut a v-shaped notch in one of the tail flippers and return it to the sea. This mark identifies a known spawner, even after it has released its eggs. Landing of v-notched lobsters is prohibited by law in Maine.

Since there is no reliable way to estimate the total spawning population of lobsters in the wild, scientists at the NMFS laboratory at Woods Hole, Massachusetts, developed a computer model to predict how many eggs the average female recruit to the fishery⁶ would produce over her lifetime. Introduced by Josef Idoine and Paul Rago, the "Idione-Rago Egg per Recruit Model" has been refined by other American and Canadian scientists, and has "...become the standard for assessments in the USA and the Canadian Maritimes Region" (Pezzack 1999). Based on this model, the FRCC estimated that "...egg production in most lobster populations around Atlantic Canada is only about 1% - 2% or less of what it could be if females were not exploited" (Canada, FRCC 1995: 19). The model requires sixteen value inputs. Included among them are the conservation measures or "tools" proposed by the FRCC to increase egg production, allowing them to be tested conveniently at different levels of application using the model.

The modified Idione-Rago model is an attractive management tool because it doesn't require any new conservation measures: existing measures (such as minimum size) can be adjusted to predict any desired egg per recruit yield. As a predictor for Atlantic Canada, however, the model is problematic because certain input values such as those concerning lobster size, mortality, and molting are simply not known for certain, and must be estimated. As a basis for the assessment of the health of Canadian Atlantic lobster stocks, it is controversial for two other reasons. The first is that instead of adopting the NFMS target of ten percent, "...the FRCC recommends an egg production per recruit target of 5% of that of an unfished population. We believe this is a reasonable and achievable medium term target... While the precise level may appear somewhat arbitrary, and as such, may be criticized by some, the absolutely essential requirement is that each LPA move soon and decidedly towards this target" (Canada, FRCC 1995: 34). In response to the FRCC recommendation and adding to the appearance of arbitrariness, DFO managers and scientists, meeting in late 1997, proposed, as an interim target, that each LFA develop a four-year plan that would simply double whatever its present calculated egg per recruit level was (Powles 2001: 72). The Fisheries Minister adopted

⁶ A 'recruit' to any fishery is an animal that has grown large enough to be landed legally.

this plan in December 1997 for immediate implementation. It is significant that in his otherwise very critical report, 'Managing Atlantic Shellfish in a Sustainable Manner', the Auditor General of Canada lauded this plan: "Only the Atlantic lobster objective is clear and measurable. The other fisheries management plans include no clear expectations of what is to be achieved on either a short-term or sustained basis" (Canada, Office of the Auditor General 1999: 8). But fishermen object that it is improper to justify what they argue are purely precautionary conservation measures on what they consider to be shaky scientific grounds. In the course of presenting their own alternative conservation harvesting plan in 1998, LFA 34 fishermen reported that,

The second theme [of the workshops in which the plan was prepared] was the uncertainty associated with the stock assessment for LFA 34. Scientific data based on lobster landings [which are collected in the winter] provide measures of abundance at a time when lobsters are less present in inshore waters. There are very little data on what is happening [in the closed summer season] when lobsters are inshore *en masse* and breeding. Similarly, landings data tell only in which port lobsters are landed, and not where they are caught. Thus there is no information on fishing location and therefore, no reliable information on the very large midshore area. This makes full assessment impossible. In effect, there is no reliable information on the existing level of egg production in LFA 34. It also follows that it is not known if that level needs to be doubled, and what would constitute a doubling of egg production (Lobster Fishing Area 34 Workshop 1998: 2)

The second reason the egg per recruit model is controversial as a stock assessment tool is that there is little evidence to link the egg per recruit level with the abundance of mature animals. In fact, at the time of this writing, when the egg per recruit level is calculated to be at a historic low, the rate of recruitment to the fishery is at an all-time high. According to two DFO lobster biologists,

Although the American lobster appears to be one of the most intensively studied and popularly recognized marine crustaceans there remain large gaps in understanding of its life history and the ecological mechanisms controlling abundance... critical linkages between oceanography and larval life-history phases are lacking, and the existence of a stock-recruitment relationship is largely a matter of faith (Elner and Campbell 1991: 350-1).

The FRCC report recognized that there were serious deficiencies in scientific knowledge and that fishermen were skeptical of the theoretical models in use. "Fishermen expect more evidence that the models reflect what is actually happening in the fishery and they

want to be informed and to understand the scientific basis for decisions". The report (Canada, FRCC 1995: 42) recommended three priorities for future scientific research:

1. Definition and assessment of conservation measures;
2. Monitoring current stock status; and
3. Understanding long term trends.

Specifically, the report recommended more research on the reproductive capacity of lobsters; a more precise understanding of the geographical location of populations and spawning grounds and the extent of adult migration and larval drift; development of a stock status database by LFA; and further research on the life cycle of the lobster, taking into account ecological factors including trends in climate, lobster fishery technology and the effects of other human exploitative activities (including aquaculture) in the lobster habitat.

Funding for lobster research had declined steadily from the late 1980s through 1995, when the FRCC report was released. Perhaps this was partly due to a stunning recovery of the lobster stocks during that period, concurrent with the crises in Atlantic cod and salmon populations that demanded much of the Science Branch's attention. In response to the FRCC report, the DFO held a series of workshops in 1995-96 to develop research projects to pursue the FRCC recommendations⁷. The result was the Canadian Lobster Atlantic Wide Studies (CLAWS) program, which received four-year funding from the DFO's strategic research fund (Canada, DFO 2001a: ix). At the first CLAWS Symposium, held in Moncton, New Brunswick, in March of 2000, DFO scientists presented twenty research papers in sessions focusing on larval drift, juvenile lobsters, lobster 'catchability' and the refinement of lobster stock assessment tools. Much of the research done under CLAWS broke new ground in Canadian lobster science. Most of the scientific papers presented were case studies, since the area-wide time series databases needed for more comprehensive and comparative work usually did not exist. Just four of the case studies, including three on larval drift patterns and one on juvenile lobster distribution involved field research within LFA 34. The CLAWS program was an

⁷ As noted previously, the FRCC recommendations were strongly informed by the advice of DFO lobster biologists.

important first step in gathering the kind of fisheries-independent⁸ data needed for more accurate stock assessments, and further research was planned for a 'CLAWS II' sequel. According to the preface to the CLAWS Symposium Proceedings, "The project work presented at the Symposium represents good progress towards the CLAWS objectives, but much more remains to be learned about lobster populations and their response to fishing" (Canada, DFO 2001a: ix). The practical concerns of stock assessment scientists are captured in a discussion paper on biological reference points for lobster:

Biological reference points must be supported by fishermen and fishery managers as well as being biologically meaningful and applicable. The egg per recruit concept has proved difficult for fishermen and managers to accept, despite its desirable characteristics (it integrates fishing mortality, fecundity, and size at first capture into an overall measure of stock status, and can be adapted to take account of maximum size limits, V-notching, closed areas and other management measures). Further work to explain the egg per recruit concept and to encourage its adoption, or find different reference points which are more widely accepted, is required (Powles 2001: 74).

Under the Conservation Principle of 'Accountability', the FRCC report had recommended that lobster fishermen "...have a definite and enhanced role in selecting the conservation measures most appropriate to their area..." (Canada, FRCC 1995: 26). In December 1997 the new Minister of Fisheries and Oceans, David Anderson, requested plans from each LFA to achieve the egg doubling target with the alternative that a "default" conservation plan developed by DFO would be put in place. The default plan included an increase in minimum size, and a maximum size limit, measures unpopular with most fishermen. In response, three organizations representing fishermen in LFA 34, the West Nova Fishers Coalition, the Maritime Fishermen's Union, and the Bay of Fundy Inshore Fishermen's Association, sponsored a general meeting of fishermen on January 11, 1998, at which it was decided to hold a workshop on lobster conservation and management (Kearney and MacIntosh 1998a: 2).

In the end, LFA 34 fishermen convened two workshops, the first, March 26 to 27, and the second, July 22, 1998 (Kearney and MacIntosh 1998a and 1998b). Robert C. Bayer, a lobster biologist from the University of Maine and director of the Lobster Institute

⁸ As contrasted with 'fisheries-dependent' data, collected from the fishing industry,

located there, was invited to the second workshop. Bayer was an advocate of v-notching, and in addition to addressing the workshop, he distributed two papers on the topic (Botsford, Wilen and Richardson 1986; Daniel, Bayer and Waltz 1989). Botsford, Wilen and Richardson had developed a recruitment model that portrayed v-notching as a more effective way to increase egg production than even a substantial minimum size increase. According to this model, even if only twenty-five percent of all berried females were v-notched, egg production would more than double (Botsford, Wilen and Richardson 1986: 41).

The LFA 34 conservation and management workshops laid bare the roots of an increasing friction between DFO Science and the fishermen. The problem really grew from the first step of the FRCC conservation strategy, which was to define targets against which the conservation strategy could be measured (Canada, FRCC 1995: 27). While the FRCC allowed that targets could be general, such as "improving the stock structure", it is evident that the FRCC, the Fisheries Minister, and, for that matter, the Auditor General, preferred something more specific. The FRCC report concluded that, "The key elements in achieving a 'healthy fishery' are **good egg production, a reasonable fishing mortality, and a biomass composed of several year classes.** (Canada, FRCC 1995: 47 (emphasis theirs)). In order for the effectiveness of a conservation strategy to be measured against these elements as specific goals, each requires an operational definition, and each requires a measurement procedure that is both valid and reliable. Fishermen at the workshops argued - and continue to argue - that DFO scientists do not have sufficient scientific evidence to underwrite their operational definitions of the goals, and that furthermore, the measurement procedures they have adopted are neither valid nor reliable. As one fisherman told me, "Science has been working with data that we passed to them in logbooks that were false. So fishermen gave false information to scientists, and now they work with this information." Based on these arguments, the fishermen at the workshops proposed to pursue the FRCC goal of increasing egg production as a general target, by v-notching berried females in addition to following the existing conservation practices required by DFO regulations. The logic of protecting egg-bearing females in order to increase egg production was easy for fishermen to accept. Furthermore, v-

notching had been practiced for many years in Maine, where fishing effort was much higher, and stocks there appeared to be doing well. Finally, v-notching was strongly advocated by Bayer and the Lobster Institute. In essence, fishermen were arguing for a precautionary approach - as recommended by the Oceans Act - in a situation of scientific uncertainty, instead of trying to specify a 'good' level of egg production with insufficient evidence, and then to measure the effectiveness of conservation strategies with unreliable and possibly invalid procedures.

The Problem with Models

I don't like the way they go about their research, the way they use the figures. We went out with [one of the DFO scientists] and an LFA 34 Advisory Committee member. We set our traps three different times. What they were looking for was size and male-to-female ratio. That's all they were looking for, nothing else. Depending on the time of the year, you can't really tell what that means. Then they throw it into a computer in Halifax. They have a way of doing it that I don't agree with (response from an LFA 34 lobster captain).

Scientists readily admit, as will become clear in the discussion of interviews with them later in this chapter, that there are significant gaps in scientific knowledge about lobsters, and that data collection methods need to be improved. They also cite the need to improve operational definitions of targets and to refine and corroborate the measurement models now in use. But as government employees, they do not have the luxury of focusing on 'pure' scientific research. They must operationalize the generalized 'key elements of a healthy fishery' received from the FRCC, and then organize their scientific research around the task of developing, testing and utilizing models designed to measure the effectiveness of the various regulations in meeting these goals.⁹ This could be regarded as a standard exercise of 'applied science', but fishermen, and some scientists, will argue that in this case there is not sufficient scientific knowledge to apply.

The critical problem for DFO lobster scientists is that they do not have sufficient data or tools to properly estimate the abundance of lobster, the 'biomass'. When a DFO scientist tries to justify conservation measures at an LFA 34 Advisory Committee meeting it is not

⁹ To be fair, the FRCC recommendations were developed with the advice and approval of some of the leading DFO lobster scientists.

unusual for a fishermen's representative to inquire, with gentle sarcasm, if the scientist can tell him how many lobsters are "out there." Over the years, DFO scientists have, however, employed a number of models designed to estimate lobster mortality, the removal of lobsters from the biomass either by natural means or by fishing. Fishing mortality can be expressed as an exploitation rate, the percentage of lobsters removed from the legal-sized stocks every fishing season. It can also be expressed as an instantaneous measure (F) for use in further calculations (Tremblay and Eagles 1998: 4). In measuring mortality relative to the total biomass, the validity of these models is open to question, because they assume a constant recruitment rate from year to year (Pezzack et al. 1999: 4). The dramatic upsurge in lobster landings over the last ten years makes this assumption difficult to defend. In measuring mortality in an absolute sense, these models may be unreliable due to the sources and quality of input data specified to inform them. The main sources of data are samplings of reported commercial landings, though these may be corroborated in some cases by scientific sea samplings (Schick 1998: 8). The reliability problems are with the accuracy - and truthfulness - of commercial reporting, but also with the fact that 'catchability' is usually assumed to be constant throughout the year and for all sizes and ages of lobsters. Since data on sub-legal (pre-recruit) lobsters are not normally included, most of these models estimate the fishing mortality rate of legal-sized lobsters rather than the mortality rate from all causes in the entire population or biomass.

Fishermen's opinions on the credibility of mortality measurement procedures have not improved with the knowledge that DFO scientists have used several different analytic models to estimate fishing mortality in recent years - each of which could lead to different estimates based on the same data set - or that there is really no scientific consensus on the best way to make this estimate. It is well beyond the scope of this chapter to try to describe the intricacies and refinements of the models that have been developed for quantitative fisheries stock assessment or the scientific reasoning behind them. The reader is referred to a scientific text such as Hilborn and Walters (1992) for these details. DFO scientists have mostly relied on two types of models for estimates of fishing mortality: depletion estimators, and virtual population analysis (VPA). The

fundamental difference between the two types is that VPA takes the age or size of the fish into account, while depletion estimators do not (Hilborn and Walters 1992: 349, 391). The 'Leslie' analysis, first described in 1939, is the simplest form of a depletion estimator (Hilborn and Walters 1992: 393), and the one mainly used until recently by DFO scientists. Fishing mortality estimates are based on the rate of catch rate decline during the fishing season. If the catch rate declines steeply, this is taken to indicate a high level of fishing mortality (Canada, DFO 1998c: 4). This type of analysis does not take into consideration the catchability of lobsters at different times of year or the migration of lobsters in and out of the fishing grounds.

Virtual Population Analysis

VPA is also known as 'cohort analysis', because it involves comparing the distribution of recorded catches between two or more size groups. If catches are largely confined to the smallest legal size group, this is taken to indicate a high level of mortality in *previous* years, since it would appear that most of the larger animals had already been caught. DFO scientists have developed, refined, and used a number of VPA, or cohort analysis models. Because it is impossible to determine the age of a lobster, cohorts are arranged by molt groups. Lobsters grow suddenly but regularly in size by molting. The first molt group considered consists of all lobsters that have just attained legal size by molting ('recruits'). The simplest molt group cohort analysis for estimating mortality is to compare catches in the first or 'recruit' molt group with all others. The most sophisticated is the 'length cohort analysis' (LCA), which compares the distribution of catch in a single year among many molt groups that approximate age cohorts in the lobster population (Schick 1998: 8). If recruitment and natural mortality are assumed to be constant, LCA can be used to estimate the fishing mortality over time for each molt group, and to predict the future mortality in each group. At the 1996 Invertebrate Fisheries RAP meeting, the LCA was chosen as the common method to be used in future Atlantic Canadian stock assessments because of its sophistication - and because it was it was one of the methods used routinely in U. S. lobster fisheries assessments, allowing international comparisons (Pezzack et al. 1999: 4). The LCA has also been found to produce lower estimates of exploitation rates than other analytic methods (Canada, DFO 1998a: 7). This has caused

some concern, because other methods were used to calculate the exploitation rates of up to eighty-five percent reported in the FRCC Conservation Framework. DFO scientists using LCA are now estimating a much lower fifty to sixty-six percent exploitation rate over the region (Pezzack et al. 1999: 8). The LCA assumption of constant recruitment also makes some scientists, both Canadian and American, uncomfortable. In a May 2000 report on terms of reference for stock assessments, the Atlantic States Marine Fisheries Commission warned,

A basic assumption of the length cohort analysis (LCA) is that the population is under equilibrium conditions. Given that recruitment has been increasing over the past fifteen years, it is obvious that this assumption is not realistic. Therefore the Panel does not recommend the continuation of length cohort analysis. The Panel recommends that other options be explored...(Atlantic States Marine Fisheries Commission 2000: 4).

While reliable estimates of mortality and exploitation rates are certainly desirable as a general indicator of whether overfishing may be occurring, fishing mortality (F) is a crucial input to the egg per recruit model designated by the FRCC as the basis for conservation management. Because of the controversies over all models used to estimate F, there is reason to question the reliability of the use of the egg per recruit model to predict the ability of each of the various conservation strategies to achieve the mandated egg production targets.

The LFA 34 Conservation Harvesting Plan

Returning to the LFA 34 Lobster Management Workshops, Dr. Bayer's presentation on the effectiveness of v-notching reinforced the suspicions of many fishermen that the conservation measures and models being used by the DFO were controversial even within the scientific community. The workshop Steering Committee forwarded their 'LFA 34 Conservation Harvesting Plan (CHP) for the 1998-1999 Season' to the Minister in September. In addition to existing conservation measures, the CHP proposed only mandatory v-notching and asserted that "... a major scientific initiative is required to resolve the uncertainties associated with the assessment of LFA 34 lobster populations" (Lobster Fishing Area 34 Workshop 1998: 2). The fishermen, of course, preferred v-notching as a conservation measure over an increase in minimum size or the imposition of a maximum size because it would have less effect on their immediate catch levels.

Still, they could also argue that the existing minimum size had been in place for many years, and could in no instance be correlated with a decline in landings. The decline in landings in the 1970s appeared to have been solved by the imposition of limited entry. Since then, under existing conservation measures, the biomass in LFA 34 had apparently enjoyed a spectacular recovery. If the government, nevertheless, felt it necessary to increase egg production, the fishermen felt the most direct and logical approach would be to protect the proven egg-producing females by v-notching them. The "major scientific initiative" proposed by the workshop's Steering Committee was to be an equal partnership between DFO scientists and fishermen to be funded by the recently increased fishermen's license fees and other public and private sources. The initiative would be centred on extensive sea sampling surveys done together by fishermen and scientists in June. A Lobster Conservation Council funded by the government and made up of elected fishermen would coordinate conservation planning. A workshop would be scheduled for September 1999 to evaluate findings and, if necessary, revise the CHP.

The Fisheries Minister accepted the LFA 34 Conservation Harvesting Plan in the sense that fishermen were allowed to test and report on the effects of v-notching during the 1998-99 season, with no further new conservation measures in that year. However, in an October 19 cover letter addressed to LFA 34 representatives which accompanied a copy of the Minister's 'new' conservation measures, DFO Maritimes Region Director-General Neil Bellefontaine made it clear that DFO had no intention of abandoning the use of the egg per recruit model as it stood, with its controversial inputs, as a measure of the effectiveness of the various conservation measures. As it stood, the egg per recruit model predicted a mere ten percent gain in egg production from a v-notch program (Pezzack 1996), and the Minister wanted egg production doubled. Bellefontaine wrote,

As you can see, the Minister has accepted your measures for 1998. However, to ensure that a four-year plan is in place which will lead to doubling of egg production, additional measures are required. Attached are the measures, with options, that will be announced for your LFA (Bellefontaine 1998: 1).

Along with v-notching, the plan specified annual incremental minimum size increases and the introduction of a maximum size limit. These were precisely the measures that LFA 34 fishermen had hoped to circumvent by developing their own conservation

harvest plan. At the LFA 34 Advisory Committee Meeting held October 20, representatives expressed outrage and a sense of betrayal. They wondered aloud if the DFO had ever had any intention of allowing fishermen to take an active part in conservation planning, as they had though they were doing in good faith over the previous nine months. The scientist assigned to LFA 34 stock assessment particularly angered them because he had participated in the workshops, but then recommended size increases to the Minister. In fact, as of this writing, only a single size increase has been put in place, and the maximum size limit has not been introduced. Perhaps this is because the reaction of the LFA 34 fishing industry against the Minister's four-year plan was so strong, and because there is still little to indicate that stocks are declining or that overfishing is taking place. The DFO's failure to operationalize the four-year plan has reinforced fishermen's pessimistic assessment of DFO science. As one captain put it in the fall of 2000,

I still don't see how they come to the conclusion that we catch eighty percent of the lobster, and all of a sudden they come out in the last few weeks with a number that we've attained in egg production just from the size increase last fall. I mean, where did they get those numbers from? They haven't had time to do studies on it. I think it's just a cooling down period. They don't want to impose any more measure increases or a maximum size, so all of a sudden they pull numbers out of the air saying we've doubled the egg production.

One new and very important source of fisheries-dependent data became available in 1995, when fishermen were first required to submit monthly catch settlement reports, listing their daily catches by port of landing. Previously, DFO scientists had relied on dealer sales slips to determine the lobster catch rate. In 1998, as part of their Conservation Harvest Plan, LFA 34 fishermen agreed to expand this system. They now fill out daily logbooks to provide information on catch and effort by location on a grid system, and also record the number of lobsters v-notched and the number of v-notched lobsters caught. Beginning in the 1998-99 season, DFO scientists also increased the at-sea sampling program. DFO technicians accompanied selected 'index' fishermen for several weeks at the beginning and end of the season, recording daily the size, sex, egg presence, number, location and depth of traps for all lobsters landed. During the 1999-

2000 season, technicians recorded these data for more than ninety commercial fishing excursions (Pezzack et al. 1999: 4).

Since 1995, two major federal policy statements, the FRCC Conservation Framework for Atlantic Lobster and Oceans Act of 1996, have vouchsafed an unprecedented level of responsibility on DFO lobster scientists. Yet this responsibility is now less to determine what the aims or goals of fisheries science should be, and more toward fulfilling conservation goals specified by the federal government. This could be described as a move away from theoretical and toward applied science, a trend that began with the absorption of the FRB into the DFO in 1973. In effect, while DFO management has increasingly relied on DFO science to legitimate its authority to manage, the legitimacy of DFO science has been undercut by the paucity of basic scientific research.

As discussed in the previous chapter, the Oceans Act of 1996 prescribed an ocean management strategy based on sustainable development, integrated oceans management, and the precautionary approach (Canada, Statutes of Canada 1996: 15). The DFO's primary responsibility was for resource conservation, and this meant that the input of DFO scientists, rather than that of economists or other social scientists, was paramount in determining questions of resource access, allocation, and regulation. This may have been gratifying to the scientists, but it also placed new limitations and onerous responsibilities upon them. On the one hand, they had to provide acceptable population models and stock assessments to inform and direct policy makers. On the other hand, in the new era of openness and transparency dictated by the FRCC, they had to answer to fishermen on the validity of these models and assessments. In the first case, once theoretical models (such as the egg per recruit model) were integrated into fisheries policy, scientists were largely limited to a deductive approach, using the accepted theory to direct research rather than building new theory inductively from field observations and data. But in the latter case, fishermen almost always reasoned inductively from formidable banks of long-term personal observations, and were not always impressed by the more scantily clad theories of DFO scientists. This skepticism has been problematic for scientists, who rely largely on the 'fisheries-dependent' data generated by fishermen to produce their stock

assessments and defend their theoretical models. Without the respect and cooperation of fishermen, stock assessment scientists face an uphill battle.

The Stock Assessment Scientists

I interviewed three stock assessment scientists in the course of my research. I chose these three because between them they were responsible for the assessment of LFA 34 and all of the LFAs contiguous to it. The first scientist, based at the Bedford Institute of Oceanography (BIO) in Dartmouth was in charge of stock assessments for LFAs 41 (the offshore fishery) and 34. The second, chief lobster biologist for the DFO, was based at the St. Andrew's Biological Station in New Brunswick and prepared assessments for the Bay of Fundy region (LFAs 35, 36, and 38). The third scientist, also based at BIO, was responsible for the LFA 33 assessment. Each scientist had been working at the DFO for at least fifteen years, and each had worked there since finishing university. While lobster scientists share their research findings and routinely review the work of their peers, each LFA stock assessment is the responsibility of an individual scientist. Lobster scientists also share many common ideas and concerns about the conservation of lobster stocks, but the scientists interviewed employed different strategies for gathering some of the data used in producing stock assessments. These variations can be associated with the professional backgrounds of the scientists and the character of the fishing areas they are assigned to assess.

LFA 34

The stock assessment biologist for LFA 34 has been studying crustaceans in the North Atlantic since doing research on shrimp at the St. Andrews Biological Station for his Master's degree at the University of Guelph. After university he did several years of contract work with DFO, which led to a permanent position in the Science Branch. His first lobster assessment work was for LFA 41, the offshore fishery contiguous to LFA 34 and dominated by the Clearwater lobster fleet. He continued to do the LFA 41 assessments, but in 1986 was assigned to do the LFA 34 stock assessments as well. In the 1990s, he worked with Josef Idione and Paul Rago to improve and adapt the Idione-Rago egg per recruit model for Canadian use, and he was among the scientists recommending

the use of this model to the FRCC as a basis for stock assessment in 1995. He admitted there were problems with the model but he argued,

It's a first step. The idea was, instead of waiting till we knew exactly where we wanted to be, which would take five or ten years, let's get started. I think the FRCC recommendation was good where it said it was an ongoing process. I think it has to be, where the stock's assessed and the fishermen and scientists agree. Fishermen are coming to the RAP process, so they're starting to get involved in that. Again, there's a learning phase there, too. The first time they were there it was just more or less complaining, but now it's becoming more contributing. And hopefully it will evolve into a more and more useful process.

His approach was precautionary: exploitation is at a very high level today and most of the catch and most of the breeding stock is made up of new recruits. At present there seem to be enough eggs produced to maintain high recruit levels, but this is may be because of unusually low larval mortality caused by as yet unknown environmental conditions. If high larval mortality were to occur now in a single year-class, both catches and egg production would plummet when that year-class was recruited to the fishery - unless egg production had been high enough to compensate for the high larval mortality. He explained his position with an example:

As a friend of mine down in Cape Cod said at a fishermen's meeting, "Well, we can do the 'experiment' to find out where we have to be. It's easy to do. They've done it in Newfoundland for the cod. And I don't think anyone really wants to do that experiment." ...It's always going to be a gamble. I don't think we're ever going to know what we really need to do, because to do that, you've got to do the 'experiment.' Where's the cutoff point? I hope we never do that. You could do a very nice analysis now of what would be a sustainable harvest of great auks, but it's academic.

In his 1998 LFA 34 stock assessment (Canada, DFO 1998a: 7), the scientist noted the inadequacy of the catch sampling system in place, and in the course of preparing another major research document with colleagues at that time, it became clear that:

... the existing catch reporting system, at-sea sampling program and informatics infrastructure was inadequate to undertake the analysis which would provide core data inputs into landings distribution, length composition analyses, development of alternative reference points, determination of real impacts of new conservation measures on the fishery and eventual spatial integration of the stock assessment across LFAs (Pezzack et al. 2001: 3).

To rectify these deficiencies, great strides have been made in the quality and quantity of data collected as well as in the ways these data can be stored, analyzed, and presented. Historical catch and sea-sampling data have all been entered into an Oracle database. More dramatically, the voluntarily expanded content of fishermen's logbooks can be used to generate a ten-minute by ten-minute oceanographic grid map plotting relative effort, catch levels and v-notching data across LFA 34. A specific series of geo-referenced sea-samplings throughout the LFA is now repeated annually, and this more detailed data can also be projected onto the grid system (Pezzack et al. 2001). The new system makes it possible to distinguish trends within the boundaries of LFA 34. This is a very important advance because LFA 34 covers a very large fishing area with highly variable environmental characteristics and multiple fishing strategies.

Although there is some exchange of information at LFA 34 Advisory Committee meetings, the bulk of the data used for LFA 34 stock assessments is collected in a formal manner through logbooks and sea-samplings. Because the fishery has been so productive over the last decade, most LFA 34 fishermen do not support what they see as tampering with an existing regulatory system that seems to work. Unlike fishermen in areas where stocks are more clearly threatened by overfishing, LFA 34 fishermen are less likely to solicit scientific advice. As the assessment scientist put it, "I guess that's the thing with the fisheries: 'When things are good, leave us alone. When things are bad, help us!'"

Individual fishermen are naturally reluctant to share the location of their favourite fishing spots, but they are also concerned that overfishing will occur if too much is generally known about the location and movements of lobster populations. It is difficult for fishermen to work with DFO scientists as a group since LFA 34 is large and includes a diversity of cultural communities, and there is no single organization that speaks for the majority the fishermen within it. Furthermore, there is a tradition of independence even within the area's fishing communities, and so, unlike in many other LFAs, there are very few truly representative local fishing organizations. Even these are often reluctant to work cooperatively with a DFO scientist. This has been especially the case since the

submission of the 1998-1999 LFA 34 Conservation Harvesting Plan, whose recommendations many feel the DFO did not consider seriously.

The LFA 34 stock assessment scientist was not overly worried by the fishermen's current reservations about DFO science. He saw it as an evolving process. He agreed that at present there is insufficient data to properly inform conservation policy, but he felt that with the current data collection regime there would be sufficient information within the next ten years. He believed that the fishermen would gradually become comfortable with and contribute more to the RAP process, especially as time series data accumulate, models are refined, and interpretation of stock status presumably becomes less equivocal.

LFAs 35, 36 and 38 (Bay of Fundy)

The Bay of Fundy stock assessment scientist earned his Ph.D. in Environmental Science. Like the LFA 34 scientist, his academic specialty was crustaceans: he did his doctoral research on crabs. He came to the St. Andrews Biological Station in 1983 as a postdoctoral research fellow. This was followed by a stint studying marine invertebrates in Long Island Sound at Stony Brook. He became a permanent research scientist for the DFO in 1989. In his words,

The context I have comes basically from an ecological perspective. All through my [academic] career, my work was primarily in marine ecology. I didn't do fisheries work per se. I didn't for instance, go to a school of fisheries. I have always worked on the biology of marine organisms, and I've always had a strong interest in sustainable harvesting.

The Bay of Fundy scientist is responsible for the stock assessment of LFAs 35, 36, and 38. Even when taken together, these three LFAs cover less area than LFA 34, and since they are all within the Bay of Fundy system, they are assessed together in a single Stock Status Report. Because the St. Andrew's research facility is located on the Bay of Fundy, stock assessments benefit from the accumulated data of a century of governmental and academic research projects done nearby, many by graduate students or post-doctoral fellows at the adjacent Huntsman Marine Science Centre. The assessment scientist himself is an active field researcher, and has participated in numerous scuba diving surveys of lobster habitats and settlement patterns. The current Stock Status Report for

Bay of Fundy Lobster differs from its LFA 34 counterpart in its extensive use of fishery-independent data to corroborate apparent trends found in fishery-dependent sampling (Canada, DFO 2001b). As the scientist put it, "We always try to look for independent validation."

The Bay of Fundy stock assessment scientist has some reservations about the deductive style of scientific work required to fulfill the directives of the FRCC Conservation Framework:

What we did with the FRCC process was set ourselves on the pathway to a management approach that has a target. And so for the biologists it is a job involving establishing what are the appropriate values and targets: evaluating where we are at the moment and then a responsibility down the road to report back on movement either towards or away from the target. That in itself is not necessarily an efficient way to manage. It has a lot of merit to it, but to work most effectively what it means is a decision at the outset, an agreed upon path, an agreed upon control check, and then a decision at some point to evaluate progress. Unfortunately at the moment for us, and I think the fishermen too, there's been a lot of controversy over the biological part of it.

He was concerned that there isn't funding for long-term scientific research projects. This hadn't been such a problem in the past, when scientists weren't responsible for providing specific quantitative advice, but:

Now, in the FRCC era, we're asked to specify biological targets, measure progress towards them. We are now into an ongoing program of trying to give advice, yet we haven't seemed to get the message across that in order to do that effectively we really need sustained [funding]... Things such as the GIS [Geographic Information Systems], the information system technology we just started using, the logbook program in LFA 34, it used to be we didn't know how to deal with a lot of information. But we can do that now, we can deal with mass data sets. And I think we're poised to be able to give a higher level of service back to the fishermen. But to do that, we really need to increase the program.

While the aggregated license holders in LFA 34, represented by their Advisory Committee, agreed to provide DFO Science with expanded catch data in their logbooks, Bay of Fundy fishermen have shown more willingness to work directly with scientists on a local community level. For instance, fishermen on Grand Manan Island (LFA 38)

recently conducted a closed season trapping survey, and a group of fishermen in LFA 35 have been recording the size composition of their catches since 1997. In the latter case,

The stage we're in now is the fishermen, before they really commit further to this, want to see us use that data in the assessment process. And that's what we're hoping to do in this coming cycle¹⁰. At that point, if they see that their information is being valued, I think there'll be more buy-in on an ongoing basis for them to take over more responsibility for monitoring their fishery. And with that responsibility I think will come a role in the decision-making.

The Bay of Fundy scientist's wish for more corroborative data for assessments could be satisfied even in a time of inadequate research funding, were fishermen to collect and share more data in the course of their commercial fishing activities. Data delivered by fishermen working in a collaborative research project can be expected to be more reliable than that recorded in mandatory logbooks for unspecified use. But as yet the Science Branch is not structured to fully utilize this data:

What I've seen in my area is a lot of willingness, when they've seen the willingness from *us*, to go ahead and develop joint projects directly between scientists and fishermen without the intervening institutional model. The problem for us, though, has been (in the context I gave you), the overall funding environment. I have found in the last three years that I'm able to invest the time by creating space to get things going, but when they show promise I have absolutely no capacity within my group to keep it going. So what we've seen in LFA 35, for example, is that it's a project run largely by four or five committed fishermen who are showing us a model of what could be the role of fishermen in doing size monitoring of the fishery... We're trying to get a capability to get more information on size composition of the fishery as it's proceeding. It's quite costly for us to send biologists out, but the fishermen are out there, monitoring just a portion of their gear. And if we can deal with the information in an 'information flow'¹¹ sort of approach then I think over time we can build a much better picture of just what's coming out... By replicating the model of community-based technical reports, bringing fishermen in, we can develop a model of accreditation of fishermen participating in the program.

LFA 33

LFA 33 extends along the Nova Scotia southern shore from Barrington all the way up to Eastern Passage, on the eastern side of Halifax Harbour. Like his colleague for LFA 34,

¹⁰ It was, in fact, used (and acknowledged) in the current stock assessment, as was the data gathered by fishermen on Grand Manan.

¹¹ The problem with the logbook system is that it creates a massive data-entry task for the DFO. If fishermen could enter data directly as an 'information flow', this task would be eliminated.

the LFA 33 stock assessment scientist took his Master's degree at the University of Guelph: "Guelph was a good place to go. I finished my Master's in 1984. Between 1975 and 1985 I bet you at least eighty percent of the people who were hired by DFO came from Guelph." He, too, was hired by the DFO right after university, but unlike the other stock assessment scientists interviewed, began working with crustaceans only recently. During the course of his employment he was able to earn a Ph.D. at the University of British Columbia, writing about his DFO assignment at the time, the herring fishery. His first work for the DFO was on the salmon fishery off Cape Breton in the Gulf of St. Lawrence in 1985. Working out of the DFO office in Moncton, New Brunswick, he continued doing salmon assessments throughout the Gulf, but as the salmon fishery declined he was also assigned the Southern Gulf herring assessment. By 1995 he was working exclusively with the herring fishery. He relocated to Halifax in 1999, and after a year working on scallops was assigned to the LFA 33 lobster assessment. At the time of the interview, he was also assisting with the assessment of the contiguous offshore LFA 41.

Of the three assessment scientists interviewed, the LFA 33 scientist had most actively collaborated with fishermen at the local community level. This may be partly explained by his background and experience, and partly by the nature of LFA 33 itself. He had had considerable success in the salmon and herring fisheries engaging fishermen in scientific research and helping them to make sense of seemingly arbitrary DFO management decisions. He had facilitated the initiation of a successful five-year salmon stock assessment conducted by aboriginal food fishermen in the Gulf of St. Lawrence. He had worked to develop and implement a series of 'decision rules' for the management of Gulf herring stocks that alleviated gear conflict in that area and allowed fishermen to become involved in the management process. He published an article on this innovation in the ICES Journal of Marine Science in 2000. Furthermore, the LFA 33 lobster fishery itself differs from LFA 34 and the Bay of Fundy in several respects. Though it involves 771 license holders it is a much less productive fishery. It has not enjoyed the sustained and unprecedented high landings of the latter two, and has shown more signs of vulnerability (Canada, DFO 1998b).

Lobster stocks in LFA 33 are typically localized, with minimal migration and very little mixing between port cluster-based community fishing grounds. Most fishing is done close to shore so there is less investment in vessels and gear and fishermen are less driven by the need for debt servicing. Three factors emerge from this situation to foster community-based cooperative science projects. Fishermen are worried enough to want to find out what is going on; they are not fishing as hard, so they have more time to participate in research; and because stocks are localized, fishing strategies within port clusters are fairly uniform and 'local knowledge' is especially helpful in stock assessment (Clayton et al. 1998). The LFA 33 stock assessment scientist explained his approach as follows:

Well, I'll just give you my point of view on what the best way to organize science projects and for scientists to interact with fishermen is. I think it works very well at the local level. Larger committees work well for getting general agreement on an approach but when it comes to organizing and sometimes even generating projects you need to go where the fishermen are, deciding where to place traps or how to do a project cannot be done at a distance. Organizing is something that cannot be done by committees or large working groups of people that cover a wide geographic range. At the LFA level, organizing science projects doesn't work. It works to some extent at a smaller group of ports level. And I don't know if it's going to work in the lobster fishery, but it certainly worked for me in the Southern Gulf herring fishery at the community level. All of our projects were community-based, working directly with the guys. If you want a project in your area, we'll go there, this is kind of the ideal. And you go through this iterative process of getting something that may not be 'the scientifically accepted way of collecting data', but it works anyway. And I think that's the kind of approach that at least I've come into with Area 33. So when I have meetings, I don't have meetings for the whole LFA 33 science. I go to Sambro, Eastern Passage, Mahone Bay, Bridgewater. I meet with guys from Lunenburg, Port Mouton, Jordan Bay.

He is adamant that the assessment and management process should be transparent, and for this reason has reservations about the egg per recruit model currently in use:

Egg-per-recruit is a target that is difficult for industry to understand. I think one reason for this is that it is not something that is easily measured and observed by fishers. But it's all mediated through the exploitation rate and things like size that you can see quite clearly. And so the target becomes obscure while other indicators are clearer. I think we're going to have to try to move towards something else.

But he doesn't see his community-based work as strictly for the benefit of fishermen:

I don't really think of it as working *for* them, but you definitely need to work *with* them. You definitely need to address the questions that they have. Anyway, that's my approach. Fishermen are incredible hypothesis generators, so a big part of our job should be to kind of rank those hypotheses. Which ones are more important to look at? Which ones *can* we look at? And once you kind of get them to agree on one, or you say, 'I agree with you on that,' that's the most important thing. Basically I always start out by asking them if they have an idea. And sometimes they do, and sometimes there's a bunch! And then I usually say, 'Well, I have an idea.' I think you have to challenge them, too.

LFA 33 had just been detached from Areas 31 and 32 in the assessment process, so this scientist had not yet filed a Stock Status Report for the area at the time of the interview. From what he said, it appears that his approach to stock assessment will differ from the approaches taken in LFA 34 and the Bay of Fundy.

Methods and Opinions of the Stock Assessment Scientists

While they all operated under the constraints of the FRCC report, scientists had some latitude in their approach to stock assessments. Their methods appeared to vary according to the conditions and resources particular to the areas they surveyed, and according to their personal areas of interest and expertise. In LFA 34, the assessment scientist confronted a very large and productive area with a wide variety of lobster habitats exploited through multiple fishing strategies. Even at the port cluster level fishermen competed at different levels of capitalization, and there were conflicts between midshore and inshore fishermen, and between those using trawl and buoy gear. It was a highly mobile fishery with less defined community boundaries. In general, lobster fishermen in LFA 34 have not expressed interest in collaborating directly with DFO on science projects, but they *have* agreed, as part of their Conservation Harvest Plan, to provide DFO with more detailed catch data. Since extensive fisheries-independent data are not available for LFA 34, the highly quantitative grid system analysis of logbook data used by its assessment scientist seemed appropriate as an assessment tool. In the Bay of Fundy, the assessment scientist was able to use more fisheries-independent qualitative data gleaned from a history of biological research in the area and from his own proficiency as a diver to corroborate quantitative logbook data. In addition, fishermen from several port clusters in the area contributed data from localized surveys. In LFA 33,

the assessment scientist had very little experience working with lobster, but a great deal of it working with fishermen at the port cluster level. Because the fishery there is more localized, it seemed appropriate to utilize 'local knowledge' more extensively when making assessments.

While the scientists took different approaches to stock assessment, they agreed on most issues of lobster biology and population dynamics. When asked why lobster stocks continued to flourish when many other fisheries have collapsed, they stressed the animal's resilience and adaptability. Lobsters are capable of surviving on a wide variety of food sources, animal and vegetable and, being quite mobile, in many different habitats. At the adult stage they have few predators and they are long-lived. If they are captured when undersized, they have an unusually high survival rate when returned to the water. The scientists all noted the long history of government regulation as contributory, but, unlike many fishermen, none cited the decline of groundfish predators. None was prepared to explain the recent prolonged surge in recruitment. In the words of one, "To me, it's just totally bizarre!"

All three scientists expressed concern over the increased fishing power of the lobster fleet. A particular worry was the expansion of the fishery into the 'midshore' between the traditional inshore and newer offshore fisheries. In the past this area had served as a safe haven for lobsters during the winter fishing season:

[The fishermen] are going deeper, further from shore. And the reasons they give are, you know, 'It's hard to keep you're catch rates up inside because there're so many boats.' And these are all classic danger signs, if you like. When people start expanding their fishery because they can't keep their catch rates up, I don't think there's an example of a fishery where that's been good news.

There was also concern that larger boats, the trawl system and improved navigational technology encouraged fishermen to follow migrating lobsters with a mobile 'pursuit' fishery rather than merely intercepting them, and that there is no way of monitoring the extent of this practice. However, none of the scientists seemed worried about the impact of the offshore fishery. It operates on a quota of only 720 metric tons, a fraction of the inshore catch. Though it catches more large lobsters proportionally, many more large

lobsters are landed inshore. Consisting of only eight vessels, the offshore fleet is easy to monitor. In the words of one scientist,

I think it's part of the fishery. It exists. It's been there since '72. In fact, it was set up outside fifty miles to give a twenty mile buffer zone between it and the inshore. [I would say to the inshore fishermen], "You've expanded out and now are affecting the offshore catch! And because you've expanded your fishery and you've overfished your area, we should shut down this other fellow who's under quota and who hasn't had the same effect?"

While the summer food fishery pursued by aboriginal Canadians under the Sparrow decision was not seen as a conservation problem, scientists had misgivings about the possibility of a native commercial fishery operating in the summer:

If you changed regulations, you could make it so it worked. But the big problems are, in the summer you've got high catch rates, eight to ten times higher, so your trap limit's got to be reduced dramatically. You have soft-shelled animals, so your mortality rate's higher, quality lower, prices are lower. And the survival rate is lower if you're shipping them soft. You'll have more mortality so you'll have to catch more to make the same money.

One scientist pointed out that by the FRCC definition of conservation one should try to harvest to get the fullest sustainable value, a goal which would have to be ignored if a summer fishery were permitted. The consensus was that aboriginal Canadians had a right to share in the commercial fishery, but that it would be preferable if this right could be integrated and exercised within the existing regulatory framework.

Based on research done in Maine, many Atlantic Canadian fishermen felt that a mandatory v-notching program might significantly increase egg production in their areas, but the scientists were pessimistic about the value of this practice. While they believed voluntary v-notching might have a small positive effect, they felt it would be impossible to enforce and monitor as a mandatory program. Even if a v-notching program could be enforced, none of the scientists expected that it would achieve the egg production target set by the FRCC.

Scientists, as might be expected, would like more funding for scientific research. The LFA 34 scientist was confronted with a huge influx of data from the newly expanded fishermen's logbooks without sufficient staff to record this data in a timely fashion. The

Bay of Fundy scientist found himself unable to properly assist very promising community-based research efforts. All felt that their expanding administrative duties limited their efficacy as research scientists. While all three scientists noted difficulties in shifting from the more disciplined academic style of DFO Science under the CAFSAC process to the relatively freewheeling RAP process, each expressed at least guarded optimism that the new system would improve collaboration between scientists and fishermen. The point *was* made that CAFSAC, as the final arbiter, had shielded the assessment scientist from direct criticism, whereas the RAP meeting forces the scientist to defend his or her scientific assessment directly against styles of criticism from industry which are not likely to follow scientific rules of discourse. In effect the scientist personally, rather than the DFO Science Branch, must now take responsibility for the assessment.

Scientists seemed satisfied with the ultimate autonomy of the Minister. As one expressed it,

Well I think, you know, in a way, when you have a crisis it's good that you have someone who has the final authority, who can say, 'Yes, this is what will be done.' I guess it depends on the Minister and how it is used. If it's used wisely, if he follows the advice that comes to him, if you develop a process to get the good advice to him, then you have someone who can make the final word in tough decisions. Sometimes in the tough decisions you need someone to say yes or no. I know in the U. S. they've got problems where there's all those states involved. And municipalities. So it's sort of a voting process. You can spend a long time getting nowhere. And I think one of the reasons we've had good management in the past is we've had this authority that can just do it. Now we're getting away from just imposing. It's more consulting. But in the end, somebody has to make that final word, which can be good, if used wisely. Now if it's used unwisely, yes, it can be dangerous. But hopefully with our system it will always be used wisely.

Summary

The Canadian fisheries department began formally consulting scientists for advice on lobster fishery management when Dr. Prince's Lobster Commission was convened in 1898. Fisheries managers were compelled to do so by the relatively new management paradigm of 'resource conservation'. Early conservationists believed that biological scientists were capable of finding artificial means to perpetuate commercial fish stocks

for a maximal sustained yield. Chief among these means was the fish hatchery, and hatchery research predominated in Canadian lobster science until the 1920s. While government officials acknowledged the authority of biological science, fishermen were not impressed, and were consequently disinclined to obey conservation regulations voluntarily. Fisheries managers found it impossible to enforce conservation regulations at sea without a high level of voluntary compliance, since they were dealing with tens of thousands of lobstermen fishing a vast area of the ocean. This made the idea of replenishing stocks with a hatchery program especially attractive. When the hatchery program was abandoned, fisheries managers attempted to control the fishery with regulations that could be enforced on the wharf: gear, seasonal, and minimum size restrictions. These efforts were largely unsuccessful because fishermen did not acknowledge the authority behind them. In Durkheim's words, the fishermen did not believe that, "...the prescribed action may very well have useful consequences, whereas contrary behaviour would entail harmful results" (Durkheim 1972: 98).

In the 1970s, three factors encouraged lobster fishermen's compliance with the authority of a scientifically informed federal fisheries department. The first was an alarming decline in lobster landings: something had to be done to protect lobster fishermen's livelihoods. The second was the implementation of limited entry licensing. Licensed lobster fishermen now identified themselves as a special group with a vested interest in protecting a resource that could now be properly described as a common property. Third, the Fisheries Minister Romeo LeBlanc made it clear that it was his intention to manage the fishery for the benefit of the fishermen. Licensed lobster fishermen began to respect the authority of the DFO in the 1970s because the Department was, for the first time, genuinely addressing the problem of distributive justice in the lobster fishery. Limiting entry was a utilitarian approach to distributive justice, based on outcome rather than procedure. It also appeared to be achieving its intended outcomes of curbing overexploitation by reducing fishing capacity, and of providing an acceptable income for the largest possible number of fishermen.

Fishermen's new-found respect for federal authority in fisheries management was severely jeopardized by a series of fish stock crises that began in the 1980s and culminated in the northern cod stock collapse in 1992. Specifically they questioned the legitimacy of scientific knowledge generated behind closed doors in the CAFSAC process. The Department of Fisheries and Oceans responded to this legitimacy crisis in two ways. First, it narrowed its field of responsibility: since the Oceans Act of 1996, its mandate has been essentially restricted to resource conservation, a concept with which fishermen readily agree. This mandate has been operationalized with clearly defined conservation targets. Secondly, the DFO opened up the stock assessment and regulatory processes to public view, and invited advice and consultation from the fishermen as a formal part of those processes. With this second move, the Department created the space for the development of procedural fairness in the distributive justice process. Since fisheries management is to be based on stock conservation, and since stock assessments are made on the basis of scientific knowledge, procedural fairness in the construction of what is to be considered 'scientific knowledge' is very much an issue.

Under this new regime of conservation and openness, fishermen (and others) have assailed the authority of the Science Branch on three fronts. The first assault is on the political front. Because scientific efforts are largely restricted to fulfilling the conservation targets set in Ottawa, scientists are perceived as tools for accomplishing established federal fisheries policy. The second assault targets the paucity of basic scientific research. There is no funding for extensive field research on lobster population dynamics, so stock assessments are largely derived from questionable population models. The third and most important assault is on the process of 'normal' science itself, its self-imposed limits to the range of legitimate 'scientific' discourse, its preoccupation with methodological rigour, and the kind of knowledge it produces. This assault has been encouraged by the ineffectiveness of scientific models in preventing the groundfish crisis, and by the inability of scientists to explain the unanticipated robustness of the Southwest Nova Scotian lobster stocks. And although input from lobster fishermen is encouraged in LFA Advisory Committee meetings and in the Regional Assessment Process (RAP), the

discourse of 'normal' lobster science, as it stands, is ill equipped to incorporate the 'anecdotal' accounts that fishermen routinely delve from their formidable stores of local ecological knowledge (Neis and Felt 2000: 15). As one seasoned lobster captain put it,

I just don't think they want to listen to common sense. I mean, some fishermen have been fishing even longer than I have; they don't have a degree, or anything like that, but they're not altogether stupid. And yet [the DFO scientists] won't listen to us, to somebody like me without a degree.¹²

And another captain elaborated,

I'm sure the majority [of the DFO scientists] mean well. They try to do the best they can with the numbers they have. But I have to wonder about how they come up with their predictions for catch rates. It's not a simple equation. You're not talking numbers, you're talking *lobsters*.

¹² To be fair, the DFO scientists have recently been involved in pilot projects designed to incorporate fishermen's local ecological knowledge into the stock assessment process. One of these projects, carried out during 1995-1996, focused on the lobster fishery in the Magdalen Islands (Gendron et al. 2000).

Chapter 6

GLOBALIZATION AND ITS EFFECT ON THE LOBSTER MARKET

We can therefore define globalization as: *A social process in which the constraints of geography on economic, political, social and cultural arrangements recede, in which people become increasingly aware that they are receding, and in which people act accordingly* (Waters 2001: 5 (italics in original)).

In the previous two chapters I have discussed the historically evolving perceptions of what constitutes distributive justice in the lobster fishery, and the evolving understandings of what conditions are necessary to legitimize managerial authority in that fishery. Though much work remains to be done, fishermen and DFO managers have, in the process, come to agree in principle on three important terms of reference. The first is the primacy of conservation as a management goal. The second is the need to involve fishermen more fully in the management process. The third is the need to incorporate fishermen's knowledge into the 'normal' lobster science that legitimizes managerial authority. This promising convergence in attitudes has been aided and hastened by the current globalization process in several ways. With improved communications technology, both managers and fishermen have unprecedented worldwide access to new information and ideas. Using the same technology, managers and fishermen can exchange and distribute ideas freely and rapidly. Innovative data storage and processing technology has made the incorporation of fishermen's knowledge a practical possibility. Perhaps most importantly, the new global market for lobsters has made the industry so valuable that both participants and managers are willing to go to the greatest lengths to sustain it.

The globalization process has broken down barriers of space and time that once restricted international flows of commodities and capital, and the flow of information and ideas. This process has been facilitated by technological advances in commodity production, transportation, and communications and by government policies and international agreements designed to promote trade and the exchange of knowledge. Historically, the limits imposed by spatial and temporal barriers have been important organizing principles

in the economies of remote regions dependent on resource-based international trade. Entrepreneurial opportunities were limited, so relations of production and exchange were more regularized and predictable. But international market trends were unpredictable, and even in the best of times, commodity producers in remote regions were often poorly paid. With limited opportunities and unpredictable markets, members of remote, resource-exporting communities had to rely on each other for support in difficult times. Isolated from the larger world, community members developed local institutions, codes of conduct and conceptions of fairness and justice to deal with their problems, the conditions of community 'embeddedness' discussed earlier. As spatial and temporal barriers fell, as new markets, technology, information, and ideas become accessible, and as entrepreneurial opportunities increased, the social relations of production and exchange took on new forms, and community-based institutions, norms, and knowledge systems became less important.

Atlantic Canadian fishing communities have depended on international trade for their survival since the earliest days of European colonization, but constraints of geography remained firmly in place in the early cod fishery. Under the mercantile system, the local fish merchant mediated most commodity exchanges, and economic, political, social and cultural arrangements within the community were largely undisturbed by external influences (Barrett 1992: 45-48). In contrast, the commercial Atlantic Canadian lobster fishery has had a globalizing dynamic from its inception. Commercial lobster fishing began in Atlantic Canada in the latter half of the nineteenth century. Eric Wolfe has observed that during this period, mercantile capitalism began to give way to a more aggressive industrial form of capitalism that "...encroached ever more intensely on [local] social arrangements predicated on [indigenous] modes of production..." (Wolfe 1982: 311). Unlike the cod fishery, the Canadian lobster fishery was founded on industrial, not mercantile, capital. Hundreds of local lobster canneries, often financed with American capital, supplied the international market with a manufactured luxury commodity. By providing fishermen with an attractive alternative - ready cash payments - to the existing mercantile truck system offered by groundfish buyers, the lobster canneries reconfigured social and economic relationships in Atlantic Canadian fishing communities. They

provided wage work for non-fishing community members, including women, establishing a cash economy and the beginnings of large-scale class differentiation in remote settlement areas. Prior to the canneries, class differentiation in small inshore fishing communities was fairly simple. On the one hand were one or two merchants, and on the other, the commodity-producing households, bound to a merchant by the truck system. The canneries created a new variety of employment alternatives, with varying rates of cash remuneration and different relationships to the means of production. Some fishermen owned their vessels and gear, while others did not. While fishermen were paid on the basis of catch, plant employees worked for wages. In some communities the economic power of the canneries was such that they owned the fishing vessels and gear and could dictate who would fish for lobster, where they would fish, and how they would fish. In their quest for profit, the canneries encouraged fishermen to land undersized and berried lobsters, and by the end of the nineteenth century, the stocks were seriously threatened.

However, by the early twentieth century a mercantile-style live lobster trade was beginning to replace the canning industry in Southwest Nova Scotia. Southwest Nova Scotia was a short distance by sea from the New England market, and it produced a very high quality hard-shelled lobster. These lobsters fetched far more in the live market of the early 1900s than the canneries could afford to pay. The early live lobster trade followed the mercantile pattern. One or two local merchants purchased lobsters from fishermen at each wharf and transshipped to larger ports, where American-owned smacks collected the lobsters and transported them to the major brokers in New England. The transportation infrastructure limited most of the markets for perishable live lobster to the eastern seaboard of the United States, and even then there was high shipping mortality. New England companies dominated the markets and controlled the transportation infrastructure. Live lobster was a luxury item with a limited market and therefore vulnerable during economic downturns. It was also a seasonal item: soft summer lobsters could not survive shipment. For these reasons, lobster fishing provided only part of the year's employment for most fishermen in Southwest Nova Scotia until the late twentieth century.

After the Second World War, improved highways and ferry service allowed rapid truck transportation of Canadian lobsters to more distant markets in the United States. Post-war prosperity increased the demand for such luxury items. Truck transportation gave some Canadian lobster buyers the opportunity to deal directly with American customers, bypassing the major brokers in Maine and Massachusetts. Southwest Nova Scotia firms were aided by the establishment of the daily "Bluenose" ferry service between Yarmouth and Bar Harbor, Maine in 1956. Beginning in the 1960s, air shipment opened new markets in the western United States and Europe. Despite these infrastructural improvements, the Canadian lobster still remained a rare and exotic item on restaurant menus beyond the eastern seaboard. It did not become a truly global commodity until the 1980s. Three factors contributed to the globalization of the lobster industry. First was the major increase in lobster landings that began in the late 1970s. Second were the improvements in processing, shipping, and storage technologies that allowed high-quality lobster to be shipped anywhere, anytime, in a variety of forms, at a reasonably stable price. Finally, there was a growing international demand for the product stemming from the nature of the globalization process itself. As Appadurai points out, globalization involves both the homogenization and the heterogenization of world cultures (Appadurai 1990: 5). Widely separated cultures demand strikingly similar imported commodities, but the commodities themselves remain symbolic of cultures with which they are associated. Consumption of these products suggests a vicarious participation in the cultures that they symbolize. Harvey discusses how foods strongly identified with geographic and cultural locations are now available internationally, making it unnecessary to visit the place to participate in its symbolic essence (Harvey 1989: 299). The value of these symbolic commodities has increased, even in their places of origin, but abroad there is also an interchangeability of demand among them. The collapse of the lobster fishery would have a significant effect on New England seafood specialty restaurants, but a restaurant in Tokyo could easily substitute another 'exotic' if Canadian lobster became unavailable or even prohibitively expensive.

Because globalization involves transcending the constraints of time as well as space, there is increasing interest in high quality processing and freezing of Canadian lobster. Frozen lobster can be held indefinitely and delivered anywhere, anytime, at a stable cost. It is available in many convenient forms at different prices. It is easier to prepare, and can be stored until needed in the restaurant freezer. It is especially suitable for use by medium-priced seafood restaurants and chains. In 2000, processed lobster accounted for two-thirds of the value of Canadian lobster exports (Canada, Agriculture and Agri-food Canada 2001: 6). The recent effect of this in Lobster Fishing Area 34, known primarily for its high quality *live* export product, has been to encourage intensive fishing at the beginning of the season in December, when stocks are most accessible. Processors now absorb the excess catch that would previously have glutted the live market.

The lobster industry illustrates the potentials and the uncertainties of a globalized marketplace. The industry has enjoyed an expanding market and increasing market prices, but the fragile nature of the global market was revealed by repercussions from the terrorist attacks of September 11, 2001 on the World Trade Center in New York and the Pentagon in Washington. In the case of live lobster, the sudden paralysis of international airfreight shipping caused immediate losses: international orders could not be filled, and lobsters delayed in transit perished. In the months that followed, international air transport service was reduced, and several airlines¹ involved in shipping lobster went out of business. In addition, the economic decline that followed the September 11 attacks reduced the demand for luxury imports, and wharf prices for lobster in Southwest Nova Scotia fell significantly during the 2001-2002 lobster season.

This chapter will focus on the globalization of the lobster market, but globalization has also had a direct effect on the business practices and consumption patterns of lobster fishermen and their families. Until the 1970s, lobster fishing, even in the relatively productive Southwest Nova Scotia region, was a low-capital, low-profit enterprise accessible to anyone with a boat. Gear, and even vessels could be constructed at low cost, using local materials, often by the fishermen themselves. Navigational tools might be

¹ The most important of these was Canada 3000.

limited to a watch, a compass, and a navigational chart. Limited entry licensing turned resource access into a capital asset, encouraging further investment. As the lobster stocks improved and demand and prices for lobster rose in the globalizing market, capital investment has increased. This new capital investment has been primarily in imported products, including sophisticated electronic navigational, positioning and communications systems. While vessels and traps are still manufactured locally, the materials that go into them are imported. New, safer vessels are constructed of fiberglass instead of local lumber, and propelled by specialized marine diesel power trains rather than recycled automobile engines. Traps are made from coated steel mesh rather than locally cut laths, and the heads and bait bags are made from imported netting. Since the cost of entering and gearing up for the fishery is so high, debt financing is frequently required, and when fishermen turn to a Canadian bank² for a loan, they are also articulating with a complex global financial system (Harvey 1989: 160ff.).

Global influences suffuse the patterns of consumption and leisure practices in fishing households. Like others at their income level, lobster license holders and their families enjoy the bounty of imported luxury and entertainment products now available, motor vehicles and ATVs, cell phones and satellite television. Winter vacations to the Caribbean are not uncommon, and golf has become popular in many communities.

While globalization has substantially increased the cash flowing within lobster fishing communities, it has also increased the proportion of cash flowing out of them.

Globalization has improved the gross domestic product of the region as an aggregate, but the wealth is more unevenly distributed than in the past, and much of it leaves the region almost immediately. Lobster license holders enjoy an unprecedented variety of options as they make business and leisure decisions, and they and their families are generally quite pleased with the effects of a globalizing world economy.

² Unlike the United States, which accommodates a myriad of local and regional banks and savings and loan associations, Canadian banking is dominated by five national financial institutions: the Bank of Montreal; the Bank of Nova Scotia; Canadian Imperial Bank of Commerce; the Royal Bank; and the TD Bank Financial Group. Each of these banks has foreign offices, and each is involved in international finance.

The Lobster Marketing Structure

Well, there are some big companies and some little companies. You have the whole spectrum. And you have a migration over time of the little companies becoming bigger companies and the bigger companies becoming smaller companies. It's typically a one- or two-generational thing with the lobster business because it's so 'owner-operated'. You don't develop a corporate structure within the industry that can be passed on to another, you know, the newest level of management. If you look at most of these businesses, they're owner-operated. They're not corporately owned. They're not publicly traded. They don't fall into the normal business structure.

- An LFA 34 lobster shipper

The complexity of the process of catching, buying, storing, brokering, shipping and finally end-marketing live lobsters may be unprecedented in the food industry. The nature of the commodity - fragile, perishable, expensive, and fluctuating widely in value and availability - dictates that successful participants must earn and cultivate high levels of trust and loyalty from the people with whom they deal. In the lobster industry, trust is based in personal relationships, and this may explain why so many fishermen still sell their lobsters to small local buyers, people they are likely to have grown up with, rather than to the large companies, the 'shippers', which seem to dominate the market.

The lobster marketing system differs from those of other fisheries, due to the special qualities of the lobster as a commodity. Lobsters from Southwest Nova Scotia are usually marketed live, so they are more difficult to hold. The price and availability of lobster fluctuates widely during the year, and especially during the 6-month season in LFA 34. Perhaps a quarter of the year's catch in Southwest Nova Scotia is landed in the first few days of the season in late November and, fully half of it by the first week of January. From January to mid-March hardly any lobsters are caught, but catches increase dramatically as ocean temperatures rise through April and May. Most lobster is consumed in restaurants rather than at home, and while the large-clawed *Homarus americanus* lobster is unique to the eastern seaboard of North America, it is demanded internationally in finer restaurants. Many expensive eating establishments carry lobster as a loss leader just to make their menus 'complete'. According to one major lobster shipper, "Most of the restaurants don't make money with it. They handle it just because

they're a seafood restaurant and they think they have to have it on the menu to bring in customers." In addition, the price of live lobster by weight is much higher than that of almost any other commercial ocean species. Finally, in LFA 34, lobster must be gathered from nearly a thousand captains landing on over a hundred wharves scattered from Brier Island to Barrington Passage. In sum, lobster buyers must address a number of special challenges.

The lobster marketing structure also differs from other fish marketing systems in the great number and variety of participants involved. At the bottom are 'flippers', individuals who own or lease a small van equipped with a scale and prowl the wharves during periods of lobster scarcity. They offer fishermen slightly more than the going or 'wharf' price for lobsters and then quickly resell or 'flip' them to larger firms. In the middle of the marketing structure are established, medium-sized fish merchants with modest holding facilities who usually buy directly from fishermen and sell to international lobster shippers. At the top of the structure are corporations that can afford to purchase many lobsters when they are cheapest because they have the facilities to store a million or more of them live for periods of up to six months. Lurking about the periphery of the market are shadowy, unlicensed 'fly-by-nighters', some of whom really do operate at night, buying for cash, sometimes at secret landing spots.

The federal Department of Fisheries and Oceans manages the harvest of Canadian fish stocks at sea, but once fish are landed, regulation of sales and handling becomes the responsibility of the provincial government. However, federal pressure has recently forced the Nova Scotia Department of Agriculture and Fisheries (DAF) to require all provincially licensed fish plants to register with the Canadian Food Inspection Agency and to comply with federal standards for health, safety and quality control. This move has had less effect on the Nova Scotia lobster industry than on other provincial fisheries because lobsters are rarely processed in Nova Scotia and because, until very recently, holders of lobster buying licenses have not been required to own plant or holding facilities.

In May of 2001, the DAF reported having authorized 369 lobster buyers' licenses, 200 for fish plants and 169 for independent lobster buyers. The DAF no longer issues new groundfish buyer's licenses, but anyone meeting provincial qualifications may still obtain a lobster buyer's license permitting them to purchase, store, and resell lobsters. Any party purchasing lobster directly from fishermen (with the exception charitable organizations and individuals purchasing less than twenty-five kilograms a day for home consumption) is required to be carrying a provincial buyer's license in hand at the time of sale. New provincial legislation passed in June of 2001 requires restaurants and fish markets purchasing lobster from fishermen to obtain buyer's licenses.

A Typology of Lobster Buyers

It has been challenging to construct a useful typology of the buyers of lobster because there are so many variations in activities and style among them. For purposes of analysis I will proceed cautiously, using three 'ideal types'. The first is the 'wharf buyer', an individual or small company that buys exclusively from fishermen and sells to a larger buyer. The second is the 'broker', a larger operation that may buy from fishermen, but also buys from other buyers. The broker may have a long list of customers and might even ship out of the country, but relies on one or more larger buyers for the bulk of his sales. Both the wharf buyer and the broker are considered to be 'commission buyers' because they are usually buying to supply a larger dealer. At the top of the marketing structure are the 'shippers', large buyers who purchase almost exclusively from commission buyers, who normally have large lobster holding facilities, and who focus on supplying customers abroad in the United States, Europe and Asia.

I have based my analysis of the structure of the lobster market largely on information gathered in interviews with the owners or managers of seventeen firms buying lobster in Southwest Nova Scotia. Four of these firms were lobster shippers, five are probably best classified as brokers, and the remaining eight most closely resembled the ideal type of 'wharf buyer'. The sample included at least two buyers from each of the seven settlement areas in Southwest Nova Scotia.

While they operated at different levels in the marketing structure, the owners and managers interviewed had much in common. They were all male. Each had at least one other relative who worked or had worked in the fishing industry. All but three were born in the community where they worked, and two of those three men came from nearby communities within the study area, while the third came from a lobster fishing community in Prince Edward Island. Only four of the buyers interviewed had ever been employed outside the fishing industry, but interestingly, only three had ever worked as fishermen other than as a summer job during high school. All but five of the respondents had worked over twenty years as lobster buyers. The oldest had been in the business for fifty-six years. Like lobster fishing, lobster buying is often a generational business. Eight of the respondents carried on businesses that were started by their fathers or uncles. As an older plant owner put it, "I've never fished. I've always just been a buyer. My father bought, my grandfather bought...it's been a long line."

Eleven of the lobster-buying firms visited were involved in buying and processing species other than lobster, but only four of them obtain more than fifty percent of their gross income from other species. In some plants, however, the processing of high volumes of fin fish occupied a much larger labour force, and produced a higher *net* income than lobster. Nine of the firms had eight or fewer year-round employees. The rest employed between eighteen and fifty people.³ All firms hired additional seasonal employees to handle lobster during the peak landing periods in December and May. Those processing groundfish and pelagic species also hired seasonal workers for such tasks. All but three of the firms had some type of lobster holding facility. The smallest could hold 18,000 pounds of lobster for short periods, while the largest shipper interviewed could hold about 3,000,000 pounds for up to six months. Seven companies were capable of holding 100,000 pounds or more of lobster.

³ Year-round employees were usually employed processing other species during the summer, when the lobster season was over. The largest shipper had many more employees in facilities around the province and abroad, but only twenty-two persons were employed in its single plant in Southwest Nova Scotia.

The Wharf Buyers

Many people buy lobsters directly from fishermen at the wharf. A large number of these are 'designated buyers' employed by individuals or firms with buyers' licenses. Any holder of a provincial lobster buyer's license can designate an unlimited number of buyers. Each designated buyer must be registered with the province and carry a copy of his or her employer's license. Designated buyers may not pay for the lobsters themselves. Payment must come directly from the license holder. The province requires license holders to keep a record of the fisherman's name and license number, and the quantity, price, time and date of sale for each transaction. Provincial inspectors routinely audit all licensed buyers to be sure that this requirement is met. The term 'wharf buyer', however, is intended here to indicate the person or firm responsible for the transaction, rather than an employee or agent of such a party. Five basic kinds of wharf buyers will be described: 'traditional' wharf buyers; cooperating fishermen; 'competitive' wharf buyers; legal but unlicensed wharf buyers; and illegal unlicensed wharf buyers.

'Traditional' wharf buyers

The traditional wharf buyer is a family-based generational operator tied to a fishing community. These buyers are the modern successors to the local fish merchant, and many still buy and process fin fish, though usually on a much smaller scale. One older buyer explained,

Our business is mostly lobster, a little fish. We salt them. There's a market for salt fish now. Most of the ones I sold went down to Mexico, I guess. Lobster is about ninety percent of our business, but it wasn't once! We had three fish draggers supplying us at one time.

But some traditional wharf buyers continue to enjoy success as a diversified mercantile operation. The proprietor of a very old fish company in Shelburne County described his business as follows:

We're open twelve months. We only sell lobster for the six-month season. Then it's groundfish. Yes, we buy a full range of groundfish from boats. We buy crab now, too. The offshore fishermen are catching them. It's a by-catch of the lobsters. Right now [during lobster season] we've only got about six people on. In the summer we'll have 20 to 25 working on groundfish. Lobster doesn't produce that much

labour unless you have a cannery. We do millions of pounds of groundfish in a year. Lobster is over half our sales [revenue] even though we only bought about a half million pounds of it last year. But groundfish is about half of our business. We did a lot of hake and pollock this year. We make salt fish 12 months of the year, but it's not a high-priced item.

The typical traditional buyer purchased nearly all of his lobsters from a group of about twenty local fishermen with whom he maintained close personal relationships. The fishermen informally committed themselves to sell their catch to the buyer. In return, the buyer committed to buying all of the fishermen's catches at prevailing prices, even in times of low market demand. Traditional buyers were also likely to offer their regular fishermen a number of services including provision of bait, ice, fishing gear and gasoline (though not usually the diesel fuel used by most fishermen today). They sometimes extended loans to help pay for boats and gear, or allowed their regular fishermen to charge gear to the company account at fishing supply stores. These loans were deducted from payments made to the fishermen for their catch. One buyer described how the system worked:

The fishermen in this community are pretty much loyal to us. There's a few that sell to other people, but you can't expect all of them to sell to you. There are people with different mindsets. For some reason they just, you know, prefer to try their own luck outside, right? But most fishermen just want to go out, haul their gear, get their catch, bring it in and get rid of it, right? We're set up to do that conveniently. If the last boat comes in at ten at night, we have a crew there. We try to work with the fishermen, and please them as best we can, too. We're here for them through thick and thin. We supply them with gear, and if we can't, because we don't build traps, the fishermen just have the company charge us for them, and we take it out of their lobsters. It's convenient for them.

As lobsters have become more valuable and competition to buy them increases, the merchant's role as the fisherman's 'patron' (as described in Faris 1973: 114 ff.) has diminished. There are still some captains who are deeply in debt to their buyers, but fishermen have more choices as to where and when they will sell their catch, where they will buy their supplies, and where they will go to borrow money. A veteran lobster buyer described how the relationship has changed over the years:

We buy directly from fishermen. We deal with about twenty boats, and some of them have been selling to us for twenty-five or thirty-odd years. We have a good number of boats that don't sell to anybody else. Sometimes they'll hold and wait for

the price to go up, of course. And then there's other people who will sell to anybody who will pay a little more. There's a lot of competition. There's a lot of under-the-table stuff, cash deals. We don't do any of that stuff. Years ago we had, well, not more 'hold' on them, but we would fit them out with supplies. And we were the only one on the wharf that would have fuel for them. And we'd have bait for them. But they're more independent now. They can get their own supplies and their own fuel. The fuel trucks come down to the wharf now, and there's other dealers who just sell bait, you know what I mean? Years ago there was more holding, like, you know, they would sell to you because they were indebted some to you. We'd give them credit and take their lobsters. If the season was bad we wouldn't get our accounts. Years ago they wouldn't have enough to pay their accounts, because the price wasn't high and there wasn't a big catch of lobsters. Sometimes the accounts would go three or four years before they were paid.

Cooperating fishermen

Not all fishermen sell their lobsters directly to a buyer on the wharf. Some lobster captains have formed marketing cooperatives. With jointly held lobster buyer's licenses they can bypass the wharf buyers and sell directly to the larger lobster brokers and shippers. Some fishermen belong to formally constituted cooperatives, while others cooperate informally, usually with other family members. In 2001 there were four registered lobster fishermen's cooperatives in Southwest Nova Scotia, located in West Pubnico, Argyle, Port Maitland, and Meteghan. The largest cooperative had thirty-seven members. The smallest consisted of five captains who were all family relations. There used to be more lobster co-ops in Southwest Nova Scotia, but most fishermen today don't see that they provide any great advantage. Successful co-ops require time-consuming voluntary participation by members in management decisions. Belonging to a co-op means extra work for the fishermen, but the independent buyer's market is so competitive that co-ops can rarely offer fishermen a better price for their catch. Several fishermen reported that mismanagement and outright embezzlement led to the failure of some of the co-ops.

The formally constituted co-ops were founded as fisherman-owned alternatives to the traditional fish merchants, and they still perform many of those same functions. They employ professional managers and a lobster handling crew. They buy all of their members' lobsters no matter what the market conditions are. They usually supply bait,

ice, gear, and sometimes, fuel. Like most of the traditional buyers, co-ops do not market lobsters, but sell them on commission to larger buyers. As with traditional buyers, the success of a co-op depends on the loyalty of its fishermen. Co-ops fail when their members are seduced into selling their catches outside the co-op for a higher price during periods of high demand. It is no surprise that the surviving co-ops are all situated in tightly knit communities where selling 'outside' carries a heavy social price. When asked why his co-op had survived, a manager replied,

Well, people in this area really get along with each other. They may have something to say to each other that at times may be a little touchy, but when anybody needs help, they're there for each other. If you go ten miles one way or the other, you'll find that people pull away from each other, but here, they may not be the best of friends, but they work with each other.

Members have traditionally sold their lobsters to the co-op at slightly less than the going price and then shared any profits at the end of the season. In recent years, co-ops have been pressed to match the best going price at the time of sale and so year-end dividends, if any, have been smaller. In spite of this, members of successful co-ops continue to express loyalty, pride and satisfaction. One member declared,

I sell everything to the co-op, always have. Before, it was the union [the United Maritime Fishermen], years ago. I think the UMF died shortly after we dropped it and started our own co-op. There were funny things going on. We never got much of a rebate when we were in the UMF: four or five cents. The minute we left it, we made money. Our co-op's been good. You go in, you get your fuel. When you are buying supplies, if you have thirty or forty members the dealer will give you a break.

When lobster co-ops first appeared in Southwest Nova Scotia during the Depression years of the 1930s, they put fishermen in a position to challenge the old 'patron-client' relationship with the traditional wharf buyer. By banding together, fishermen could demand a higher price for their product and a better price on gear and fuel. Formal cooperatives were more attractive in hard times, when fishermen were routinely exploited and found it difficult to make a living. In today's competitive market, individual fishermen can negotiate comparable prices for their lobster on their own. In addition, by law, membership in registered co-ops must be open to all qualified applicants, and this inclusiveness has led to fatal political struggles within co-ops in fishing communities where there were irreconcilable factions.

While there are only four formally constituted lobster co-ops in Southwest Nova Scotia, there are many smaller groups of fishermen who market their catches cooperatively.

According to a major lobster shipper,

You have [fishermen pooling their catches to sell] all the time. The fishery in Southwest Nova has developed into such a volume that a lot of fishermen can hold their product and deal directly with someone like me. I only have to come in once or twice a week. These are groups of fishermen, their families, guys at the same wharf or whatever. As the fishermen do better and their catches improve, they'll start doing a little more of that, I think.

Fish plant owners are not permitted to own lobster fishing licenses, but lobster fishermen *are* allowed to possess lobster buyer's licenses. This is a source of contention for some of the plant owners. One large lobster shipper described a typical group of fishermen sharing a buyer's license:

Yeah, I do buy from fishermen but it's through a company. I've got one group that's five brothers, so I don't know whether you want to say that's five fishermen or a company! They have a [buyer's] license. They have a tank house. They have the same equipment that I do, pretty much. Fishermen can do anything. They can stand on a wharf and split a fish, or pack a lobster, but we all have to have state-of-the-art facilities in order to legally do that.

Some of these small groups of fishermen are also pooling their resources to accumulate additional lobster licenses. As one fisherman explained,

Groups with maybe three or four licenses can pool, and maybe pay for one of those licenses. Fathers and sons will buy up several licenses and have other guys run them. That way they pay for the licenses and pay for the rig. And within seven or eight years they own the rig, so they've got another rig worth a half a million dollars.

'Competitive' wharf buyers

Because of the sustained high volume, high demand and increasing market price for lobsters, a new breed of licensed buyer has appeared on the wharf. These competitive buyers take advantage of the fact that today many lobster fishermen no longer depend on the patronage of the local fish merchant. Many lobster fishermen are well capitalized, and can turn to banks for loans. Fuel, bait and gear are now available from many sources at competitive prices. Fax machines and the Internet keep fishermen informed of market

prices on a daily basis, and many own lobster cars or even holding tanks, so they can wait for a better price. As one competitive buyer explained,

We have a few loyal fishermen, but a fisherman is never totally loyal. They leave you for five cents [a pound]. I was a fisherman for years, and we always wanted top dollar. As it is now, we have to be on the phone trying to solicit lobsters all the time and we never know how many we're going to have. But that's the way we've got to do it. Usually what fishermen do now is have their own company. They look after their own bait. They're independent. Most of them have their own lobster cars, so they hold lobsters. So they go fishing for three or four days, then they have a blowy day, and so they market. They might be the ones to call us: 'How much will you pay today?' We tell them and they say yes or no, or they say, 'So-and-so is paying this. Can you match it, because if you will we'll sell to you because we know your money is good.' And generally we pay a little more because we only have three full-time employees, and we don't have to deal with bait, we don't have to have a freezer full of bait. So the independent fishermen most generally get a quarter more [twenty-five cents per pound] than the guy who always sells to the same dealer. So the independent fishermen, we call them 'whores', they go around and sell to the highest bidder.

The competitive buyer is a thorn in the side of the established traditional buyer. One traditional buyer told me with obvious irritation,

There are trucks, peddlers so to speak, that come around and buy from certain boats, yeah. There was a guy from [a nearby community] around here last week offering \$8.50, and he actually bought from one of the boats for \$8.50 [the going price at the time was \$8.00]. He just comes up with a truck. He doesn't have an operation here like we do. The fishermen don't understand that you can't always chase these peddlers, because they have no overhead. They back down on a wharf, hoist the lobsters up from the boat, and take them to another dealer, who could be on Cape Sable Island, Yarmouth or Meteghan. It doesn't take much to run their operation. And you look at this office here, you look at the people here, you look at the equipment we run down in our lobster pound. It costs a lot of money. But they're more of a pain than anything. Because when there's a lot of lobsters coming in, the fishermen want to go to the easiest place. They're more of a pain when things are tight like they are right now [in February] when lobsters are scarce. They give an extra quarter here, an extra quarter there, and you know, they get the lobsters.

These comments about the new competitive breed of buyer are not entirely fair. Newly licensed buyers trying to enter the marketplace are viewed with suspicion not only by established buyers, but also by the fishermen and the provincial licensing and inspection officers. They have to prove to the fishermen that 'their money is good', usually by paying with cash or certified cheque at the point of sale. Provincial officials closely

scrutinize their facilities and their bookkeeping. While they may not provide services, guarantee to purchase every lobster or have a large fulltime workforce, the startup costs to build a reputation with fishermen and public officials are high. In some cases these costs have been defrayed by larger companies, sometimes American, in return for assurance of a steady supply of lobster. And while established buyers don't like this new encroachment into an already competitive market, lobster fishermen, even those committed to a traditional buyer, welcome their appearance. As one fisherman put it,

There's probably never enough competition, but there's more than there used to be and it's better. The more competition, the better the price. Ten years ago there was only a few buyers, and they were big buyers. They controlled the price. Now there's more smaller buyers have got into it. The fishermen are more independent of the buyers now.

Unlicensed wharf buyers: legal buyers

The jobs of federal and provincial enforcement officials and even the collection of accurate catch data are made more difficult by the many unrecorded sales made by lobster fishermen to unlicensed buyers. Some of these transactions are legal and some are not. Until June of 2001, restaurants and fish markets could legally purchase lobsters from fishermen without a buyer's license. Those sales undoubtedly represented a large proportion of the lobster consumed within Nova Scotia because most of these lobsters are served at restaurants whose patrons, especially visitors to the province, are likely to want to dine on a local specialty. Charitable organizations are still exempt from buyer's license requirements, and many take the opportunity to hold lobster suppers to raise money for community causes. Unlicensed individuals can buy up to twenty-five kilograms a day of lobster directly from fisherman for personal consumption, and this is a local tradition in Southwest Nova Scotia. One plant manager whose business had grown from a family fish market explained,

This used to be a retail market, but in a fishing community it didn't really work out. We got away from it. We kept the building, but took all the retail stuff out of it and predominantly use it for an office right now. Retail doesn't work down here. People will just go to the wharf to buy their fish. They don't like the retail price. We tried it. It didn't work.

Unlicensed wharf buyers: illegal buyers

It is difficult to estimate the volume of lobster that is purchased illegally from fishermen. While Revenue Canada and many plant managers think illegal sales are a major problem, a spokesperson for the provincial Department of Agriculture and Fisheries did not feel they represented a large percentage of the catch. Illegal purchases are made both by unlicensed buyers and by licensed buyers or their legally designated agents. Illegal purchases are made of legally caught lobsters, of poached lobsters, and of lobsters landed out of season, sometimes by aboriginal fishermen. Since the origin of the lobsters and time and place of sale has only to be recorded for the initial purchase of lobsters from the fisherman, it is quite possible that illegally purchased lobsters will end up as 'legal' lobsters in the holding tanks of larger dealers. The high mortality rates of held lobster encourage this practice because illegal live lobsters can be used to replace the legally purchased ones that have died. When asked for the most difficult provincial enforcement challenge, a veteran officer responded,

Catching the people who are down on the wharf without licenses. They know the times we work, and a lot of it is arranged for late at night. Unless we get tipped off from somebody, it's hard to catch these people. And sometimes the fishermen will bring in their own lobster and truck it to those people. But we are getting better at catching them.

When I asked (in May of 2001) why some licensed fishermen would risk selling to an illegal dealer, the same officer replied,

Because at the beginning of the week they'll sell their lobsters, and when they've got enough for their UI stamps⁴ they'll sell for cash under the table so they don't have to pay income tax. And Revenue Canada is well aware of these people, and of the cash buyers who are not recording.

The officer was well informed. In January of 2002, Revenue Canada estimated that there were fifty to two hundred million dollars in illegal sales of lobsters annually in Southwest Nova Scotia, and announced that it would conduct over one hundred audits of fish buyers

⁴ If licensed captains have formed a corporation and establish themselves as legal employees, they may be able to claim Employment Insurance ('EI'; formerly Unemployment Insurance or 'UI') payments at the end of the lobster season when they are 'unemployed'. 'Stamps' refers to the former Canadian practice of issuing of stamps to employees to represent weeks of employment at a certain income level. Lobster captains may allow themselves to be paid legally until they have reached the income level that guarantees the highest EI payments.

and lobster fishermen (Meuse 2002:3). By May of 2002 a number of charges had already been laid (Comeau 2002: 8).

A fisherman described the operation of an illegal buyer operating in a nearby community:

And that buyer there, down there where my mother used to live, he was into buying poached lobsters, not necessarily from the natives but from other people there. He even dredged a little spot on edge of the marsh there where he could bring his cube van and they could come right in on a skiff. Unload them into his cube van and dump them into his pound and there you go. Yeah. The spot [i.e. the community] isn't very big, so you know what everybody else is doing. If you don't have any boats, don't have any quota yourself, you get the odd person coming in, you might buy a few groundfish, a few lobster, you might make a living, but this guy has got just about everything you want. Five or six Corvettes, and man, you just don't do that, you know.

When I asked him why no one tipped off provincial officials, he replied,

What do you do? Like I say, everyone here pretty much knows everyone else's business. You can get ruined. You can get ruined there too easy, eh? Try to stop it, they will put a load of sand in your [vessel's fuel] tank. Come dumping day, whang-o. So it's not worth it. You got a family, stuff like that, you got payments. It's too easy for them to really destroy you. Then it doesn't matter. They've still got their welfare cheques or whatever they get it from, that we've given them. So it doesn't matter, they can ruin us, but we won't be able to hurt them.

According to several respondents, part of the problem is that designated buyers for licensed firms are sometimes involved in the illegal sales. The problem is further complicated by the fact that a designated buyer may legally buy lobsters for more than one firm. Since designated buyers normally carry out legitimate business on the wharf, their presence there is not suspicious to enforcement officers. If designated buyers participate in an illegal sale, officers must actually witness the transfer of monetary payment in order to have grounds for an arrest, and well-informed illegal buyers are not likely to pay for lobsters immediately at the point of sale on the wharf.

The Lobster Brokers

Lobster brokers usually purchase a substantial quantity of their lobsters from wharf buyers and other dealers, and sell most of their lobsters to shippers rather than doing the end marketing themselves. There is a great variation in the activities of members of this group, however, and the concept of 'broker' is used here as an ideal type: there are lobster

buyers who do not fit comfortably into any one of the categories described in this chapter. While none of the brokers observed in this study used the strategies of the 'competitive' buyers who often supplied them, several operated in a fashion outwardly similar to the 'traditional' buyers. They had a number of regular fishermen who supplied them and for whom they may have provided bait, gear, fuel, financial assistance, or in some cases wharf space. Other brokers rarely bought from fisherman directly. Most brokers had spacious holding facilities, but a few simply collected lobsters from suppliers and trucked them directly to their customers. A few brokers sometimes sorted their lobsters by size, but most delivered them unsorted in hundred-pound crates. As one explained,

The lobsters are weighed up and stored in crates until shipment. We don't do any processing. We just buy and ship live lobsters. Most of our accounts are in the U.S.A. Sorting by size is something that's getting to be more popular, but it's very labour intensive. We haven't gotten into it ourselves, but eventually we will be. It really slows up buying when you're sorting by size, but it would take even more time to sort them afterwards, so you really have to sort them when you're buying them. We let them do the sorting, down in the States.

What differentiated the brokers from most wharf buyers was a primary focus on taking advantage of the ever-fluctuating market conditions. They were constantly looking to buy lobsters at a lower price, and to sell them for the highest profit.

While the wharf buyers normally occupied a fixed position in the marketplace and were essentially 'price takers', the brokers had developed more innovative ways of obtaining, holding and disposing of lobsters. Some of these ways were clearly trade secrets, and it is not surprising that brokers were the type of buyer most likely to refuse interviews. Brokers were also the most likely to be accused by fishermen of holding or controlling multiple lobster fishing licenses to ensure themselves a steady baseline supply of low-cost lobsters. Most brokers sold to one or both of the two very large shippers of Nova Scotia lobster, East Coast and Clearwater, but most also made a point of maintaining business relations with a substantial number of other dealers, both buying and selling. A wharf buyer described the marketing style of the broker he sold to as follows:

He has a few big people [specifically East Coast Lobsters and Clearwater Lobsters] that he has special relations with, and when production is high he'll move a big part of that production to those people. But he has a lot of other people he tries to keep happy with smaller shipments so they can please their customers. So when times

get tough, he has a broader base.

A broker whose main customer was East Coast Lobsters concurred:

Oh, I sell them all over the place, a lot in Canada and a lot in the Eastern U.S. I sell mainly to wholesalers or shippers. I have about 30 names in my book that I sell to regularly. What I find is you want a large clientele so you can sort of divide your product up and keep everybody happy, and keep them all asking for more.

Some brokers have experimented with a limited amount of end marketing and air shipping with mixed results. As one broker explained,

We have a web site. We have people call us from the States, asking us to ship lobsters Federal Express. We do it. As long as they give us a credit card number. It's not a lot of business. Our shipping clerk handles it. I stay away from that high tech business!

While brokers are in competition with each other, there is also an ongoing process of cooperation among certain groups of them. This is not surprising since brokers must depend on each other's help and facilities to deal with the sudden glut of lobsters in December, the scarcity in mid-winter, or an unexpected equipment breakdown. In addition, they cooperate to prevent the inflation of wharf prices for lobster. According to one broker,

There used to be an organization called CALPA [the Canadian Atlantic Lobster Promotion Association], but now buyers just work with each other. I mean, you have radical buyers who do their own thing, but you have your main buyers. Like I have my main buyer in Meteghan that I talk to all the time. I have one in Yarmouth that I talk to, one in Pubnico, one in Woods Harbour, and one in Clark's Harbour. And, you know, we just talk around. They are people buying lobsters just like we do. So we talk price, we talk about what the market is doing, and, you know, we work together on what we're going to pay fishermen and what we're trying to get on the market. Because it's no good for us to go down there and try to get a quarter higher than somebody else, because we'll keep our lobster and he'll sell his. So we all try to keep in tune with what everybody's doing.

But another broker complained that informal cooperation doesn't always work:

Well, some of these buyers... [Broker X] is your worst example. He's the biggest whore on the shore. He drives up the price on a daily basis, and it's great for the fishermen! Yes, we're on the phone with other brokers. The problem is, they don't do what they say they're going to do. You know, they're on the phone saying one thing and five seconds later, as soon as the phone hangs up, they're doing something else, because everyone wants to get an edge on the next guy. A very short-sighted industry.

The brokers occupy a precarious position in the current lobster marketing chain, not only because they must compete with each other for suppliers and customers, but because the suppliers and customers themselves are now often quite capable of dealing directly with each other. In this environment of extreme competition, it is not surprising to find some brokers abandoning the traditional courtesies.

The Shippers

At the top of the marketing chain are the shippers, lobster buyers whose focus is on developing and maintaining end markets for lobsters. End markets are international and include seafood wholesalers and retailers, restaurant and supermarket chains, and mail orders to individuals. Unlike wharf buyers and brokers, shippers always sort and ship their lobsters by size and quality (see Table 6.1), often using special packaging instead of the standard hundred-pound crates used by their suppliers. Shippers rarely buy directly from fishermen, though they do deal with formal or informal fishermen's cooperatives and cartels. There are three kinds of shippers: medium-sized shippers who are trying to establish themselves in international markets; very large shippers who are well established and diversified; and lobster processors.

Table 6.1. WEIGHT CATEGORIES FOR LIVE LOBSTER

Category	Weight Range
Canners	1/2 - 1 lb.
Chicks	1 - 1 1/8 lb.
Eights	1 1/8 - 1 1/4 lb.
Quarters	1 1/4 - 1 1/2 lb.
Halves	1 1/2 - 1 3/4 lb.
Selects	1 3/4 - 2 lbs.
Deuces	2 - 2 1/2 lbs.
Small Jumbos	2 1/2 - 3 1/4 lbs.
Medium Jumbos	3 1/4 - 5 lbs.
Large Jumbos	5 lbs. +

Source: Canadian Atlantic Lobster Promotion Association Buyer's Guide (1998)

The medium-sized shippers

Although the owners and managers of the medium-sized lobster shipping firms were usually veterans of the Nova Scotia lobster industry, most of their companies were recently established. Building a successful Nova Scotia-based shipping company has become more practical in the last ten years. Transportation systems are better, lobster storage and shipment technology has advanced, the supply, demand and price of lobsters have all increased dramatically, and the hegemony of the Boston and New York fish markets has been successfully challenged. The medium-sized shippers typically shunned the competitive northeastern U.S. market, preferring the expanding markets in the central and western United States and in Europe and Asia. One owner described his market as follows:

We sell very, very few lobsters in the Boston area. I'd say about seventy-five percent of our lobsters go to Europe and the Orient. The other twenty-five percent will go to the U.S. Not necessarily to the Boston area, but to Florida, Texas, Chicago, all spread throughout the U.S. A lot of our lobsters go to the kind of wholesalers who do a little bit of everything. They've got some lobster tanks and they do a little bit of clams and mussels. They do the whole nine yards, most of them.

The lobster market is a risky business and most medium-sized shippers have put a great deal of effort into developing and cultivating relations of trust with customers in smaller but still lucrative regional markets. One described some of the tactics he had used to expand his gross revenue to \$50,000,000 annually:

It's pretty diversified, actually. We've got five salespeople now, two in Florida, two in Boston and one in Halifax. I air ship ninety percent of my lobsters. To any country in the world, pretty much. We've sent stuff to Taiwan, China, Korea, Japan, Beirut, and all over Europe. The Beirut shipment is kind of a new one. We've only done it a few times. We're hoping it turns into a regular customer. But the rest, the U.S., the west coast of the U.S., Texas, Phoenix, Arizona (we've got a good customer there), it's all regular business, you know. Three or four times a week (or whatever) to each place.

All of the medium-sized shippers interviewed acknowledged the influence of Clearwater Lobsters on their operations. Clearwater was the first major Nova Scotian air shipper and was also responsible for many of the technological advances in lobster storage, handling and shipping. According to one respondent,

I think Clearwater just opened everybody's eyes to what could be done, especially

in terms of air shipment. Until Clearwater came around, everybody was just buying lobsters and shipping them to the U.S. by truck.

Another medium-sized shipper added,

They were the first ones to develop all these overseas markets, and they developed a holding system which is similar to what we call 'tubing' lobsters. We've ridden on their coattails all the way on everything from the marketing to the holding.

While they may have holding tanks for over a half million pounds of lobster and annual sales of over \$50,000,000, some of these shippers have offices that are surprisingly modest and sometimes rather hard to find. One was located behind a small fish restaurant on a rural highway. Another owner operated out of an office above the garage attached to his residence.

The large shippers: Clearwater Lobsters

There are two really large firms shipping lobsters out of Nova Scotia: the Canadian company Clearwater Lobsters, a division of Halifax-based Clearwater Fine Foods; and East Coast Seafoods, an American firm based in Lynn, Massachusetts. East Coast Seafoods is by all accounts the world's largest shipper of *Homarus americanus*, and Clearwater is certainly the largest Canadian shipper. Because these two companies have very different ways of selling lobsters they will be discussed separately. What they have in common is that they are both innovators, and this may explain why they have survived in a time when other giants in the industry, including two of the three largest mentioned by Acheson in 1988⁵, have collapsed.

According to a company spokesperson, Clearwater Lobsters buys about ten percent of the annual Canadian catch. Two brothers-in-law started up the company in 1976, just as the post-war downturn in Nova Scotia lobster catches was about to end. They opened a small retail outlet on the Bedford Highway in Halifax where they sold cooked lobsters to

⁵ "Three large, vertically integrated firms own dealerships, pounds and wholesaling houses, and handle millions of pounds of lobster in both New England and Canada. James Hook, A.M. Look, and Bay State Lobster all maintain their headquarters and wholesale operations in Boston and ship to all parts of the globe." (Acheson 1988:116). The James Hook Co. remains as a family-owned lobster company. A.M. Look is now a specialty company dealing in canned seafood products. Bay State Lobster went into receivership and its Boston wharf was demolished to make way for a condominium complex.

passing commuters. Although neither of the young founders had any experience in the lobster business they were an immediate success. As one of them recalled,

We were a success as a retail business. No scales, no cash registers, sold everything by the piece. We had people coming in, literally fighting over the cooked lobsters as we cooked them at suppertime. We opened up in the morning, and two hours before we opened they were lining the street. But unfortunately, retail was only good for three or four months of the year [when lobster was cheap and plentiful in Nova Scotia], so we looked around to see what else we could do.

The young men realized they couldn't compete in the established Boston market. Instead they decided to enter the very new air shipment trade with Toronto and Montreal. As they learned the intricacies of air shipping lobsters, an industry that began developing in Canada just as Clearwater was expanding, they explored and successfully entered the growing European market for lobster as well. One of Clearwater's founders explained,

We were neophytes right down the line, and that was probably our greatest advantage. We weren't hindered by prior knowledge of 'the way things were supposed to be.' We've introduced sophistication, innovation. Somebody has to show the leadership and innovation in an industry, and we happened to be the one in the lobster business to do that.

Clearwater's approach has been to look for innovative solutions to problems as they encounter them rather than writing off these problems as 'inherent' to the industry. Since Clearwater targets the premium live lobster market, ships long distances and stores for long periods of time, quality control is very important. While Clearwater no longer deals directly with fishermen, they have worked with their brokers to improve the way fishermen handle their lobsters. For instance, Clearwater persuaded Nova Scotian fishermen to use rubber bands on lobsters' claws instead of injurious wooden plugs by offering a twenty-five cent a pound premium directly to the fisherman, and supplying bands for free. They have also paid higher prices for crates containing no 'culls' (lobsters missing a claw) to encourage better handling by fishermen. Clearwater's greatest technological achievement has been the 'dry-land' lobster pound system that they developed in the 1980s. They have built two of these pounds, at The Hawk on Cape Sable Island and at Arichat on Isle Madame, which are capable of holding a total of 2,500,000 pounds of live lobster for at least six months. This allows Clearwater to purchase large

quantities of lobster in December and May when they are the cheapest, and to bridge the periods of short supply in summer and mid-winter.

Clearwater buys lobster year-round throughout Atlantic Canada. Until recently they also bought lobsters in Maine during the summer. They stopped because the summer lobsters were soft-shelled and didn't keep or ship well. But Clearwater's most controversial source of lobsters is its own offshore fleet of six large lobster boats. In 1986, Clearwater purchased seven licenses to fish in the offshore Lobster Fishing Area 41 from another fish company located in Southwest Nova Scotia. That firm had been granted these licenses to harvest lobster in the previously closed offshore area in compensation for surrendering their tuna licenses. Donna Rae Fisheries of Shelburne owns the only other offshore lobster license. The offshore fishery is controversial for several reasons. It is managed by total allowable catch (TAC) and enterprise allocations (EAs)⁶ rather than by effort restrictions like the inshore fishery. It is allowed to operate year-round, there is no limit on trap size or number, and of course, it is monopolized by Clearwater. Both fishermen and lobster buyers complain that controlling the offshore fishery gives Clearwater an unfair competitive advantage. As one buyer argued,

There are times when you're not playing on a level playing field that it gets hard. I know one Clearwater boat came in, it had 20,000 pounds of select lobsters.⁷ At that time we were paying our boats \$6.25 for selects. And at that time Clearwater paid that boat \$3.50 a pound. And I know that because the guy that runs one of my plants, his brother fishes on that boat! They pay the boat \$3.50 a pound, multiply it out, divide up the shares. Clearwater, of course, takes a company share. The captain gets a bigger share. But when they've got a \$3.50 lobster and I've got a \$6.25 lobster we're certainly not on a level playing field!

A spokesperson for Clearwater defended the offshore fishery on grounds of conservation:

With the offshore we have a sustainable harvest. We *manage* the harvest. We're exploiting at a rate of twenty percent of the biomass. The inshore is doing about eighty to ninety percent of the biomass. And we land less than two percent of the total Canadian catch.

⁶ 'Total allowable catch' is the annual landed weight of fish permitted to be landed from a fishing area in a single fishing season. Enterprise allocations are made to fishing corporations, rather than individual vessels. TACs and EAs are not used in managing the inshore lobster fishery.

⁷ 'Select' lobsters are normally the most valuable, weighing 1 ¾ to 2 lbs. The offshore fishery catches larger lobsters than the inshore, leading to charges that Clearwater is depleting the region's breeding stock.

Another recent controversy has been over the so-called "Clearwater deal". It was a payment plan developed by the company in the late 1990s to discourage fishermen from holding their lobsters at the beginning of the season in anticipation of the usual dramatic price rise at the end of December. Since Clearwater holds its lobsters for long periods and ships them great distances, the company is very concerned with product quality. Lobster quality can deteriorate rapidly when the animals are held in fishermen's cars. While a Clearwater spokesperson did not want to discuss this plan, another buyer described it as follows,

They pay you twenty-five percent of the wharf price [when you land the lobsters at the beginning of the season]. Then, around Christmas, you can get fifty percent (or seventy-five percent if you choose [to be paid off completely]) of *that* wharf price. Then they can hold out till January 13, when they get the other twenty-five percent. Each of these is the percent of wharf price on that day. But Clearwater is getting plenty of lobsters and not putting the money out, which is a good deal for Clearwater.

Clearwater offered this deal to fishermen through its commission buyers. In other words, if a fisherman's buyer sold lobster to Clearwater, the fisherman could opt into this deal or not. If he did, he carried his buyer with him, since the buyer's commission from Clearwater was a percentage of the price paid to the fishermen. In effect, it was a deal between Clearwater and the fishermen which took away the commission buyer's opportunity to make a speculative profit by holding December's cheaper lobsters and selling them to the highest bidder later on, when prices rose. The Clearwater deal proved disastrous in the millennial year 2000 after the windfall New Years' Eve sales that were anticipated did not become manifest. From one buyer's point of view,

In December of 1999 it cost the lobster industry millions and millions of dollars. Because [none of the other buyers] liked the Clearwater deal, everybody figured if we opened the boat price high enough [fishermen would not buy into the Clearwater deal]. So we did. The only problem was, what we opened for was higher than the market wanted to pay. So we all had to lose a lot of money selling those things.

The wharf price for lobster collapsed in late December due to high inventories held in misguided anticipation of a windfall. Fishermen on the Clearwater plan (and their buyers) were paid a great deal less for their lobsters than they would have received if they had accepted wharf prices in early December. But in fact, a number of commission

buyers had already paid their fishermen in full based on the anticipated price rise. Some buyers had simply matched the anticipated Clearwater price in order to gain control of the product for their own speculative purposes. Others, acting the role of 'patron', had advanced the anticipated Clearwater payment to their regular fishermen who were on the Clearwater plan. In the end it was the commission buyers, not the fishermen or Clearwater, who took the brunt of the losses, and several were bitter enough about this to cease doing business with Clearwater.

Clearwater's markets are evenly divided among the U.S.A., Europe and Asia. The third that goes to the U.S.A. is trucked to a distribution plant in Louisville, Kentucky. From there, the lobster is redistributed via UPS throughout the country. Although it began as a lobster company, Clearwater is now highly diversified in the fisheries sector. Its parent company, Clearwater Fine Foods, is a major harvester and shipper of groundfish, scallops, shrimp, clams and crabs, and the unpredictable lobster trade is not such an important part of the business as it used to be. While Clearwater's most important rival, East Coast Lobster, has invested heavily in lobster processing, a senior Clearwater executive at the Halifax office said,

We certainly haven't shifted that way. We've developed sophisticated holding, invested the money and end-tested in the marketplace. We have a reputation as a premier brand in the industry for live lobsters, and that's where we've positioned ourselves.

East Coast Seafood

According to its web site <mylobster.com>, East Coast Seafood of Lynn, Massachusetts, founded in 1981, is the world's largest distributor of live lobsters. It is held by American Holdco, Inc. (AHI). AHI holds lobster distribution companies in France, Spain, Italy, Benelux and the United Kingdom and a seafood procurement company and an international freight forwarding company both located in Lynn. It also owns Paturel International Company of New Brunswick, once the largest Canadian lobster buyer and now a major lobster processor, and Canadian Gold Seafood, Ltd., of Halifax, a major air shipper of lobster. East Coast has adopted a different strategy toward live lobsters than Clearwater, distancing itself from purchasing and holding lobsters, and concentrating on

sales to the end market. A medium-sized Nova Scotian shipper, reputed to do considerable business with East Coast, described their strategy as follows:

East Coast used to have a lot of buyers up here. Now I think they have a lot less buyers. Well, they do and they don't. They bought Paturel, so by association they have a Canadian company up here, right? But they were the biggest live lobster company in the world before they got Paturel. And Paturel was actually the biggest lobster company in the world between live and processed. But East Coast seems to be backing off of the live [lobster trade]. They would almost rather buy lobsters packed in a box, by me or somebody else, to supply their overseas customers, than to get involved in it themselves. They seem to be more into the stuff they're doing at Paturel [i.e. processing lobsters] and further markets. They have a company in Italy and a company in France that they use to distribute. And they're trying to get that kind of company to sell one box to this restaurant, really, to get to the end user. So they find it easier to buy the lobsters packed at the airport than to go through the hassle of packing. They have a lot of money. They pay fast and they pay a competitive price, so it works out all right. But I think they're devoting a lot more time to processing, a lot more time to crabs, and, you know, they're doing a lot more things than just live lobsters.

The senior Clearwater executive in Halifax seemed to concur with this assessment:

What East Coast is doing, it's removing itself from the holding, handling side of the business. As I explained, your problem starts when you take possession of the lobsters. You start running the risk of mortality, and that's your single biggest cost. Ten percent of the lobsters can go in the garbage. At least ten percent, because they're not handled properly by the fishermen. As long as they're alive when they hit the wharf, they're alive. So that's where your problem is, in holding the lobsters. What East Coast is doing is removing itself from that risk. It's handing that risk to somebody else. East Coast is saying, 'We have the capacity to market lobsters, to sell them.' They have operations in Europe like I do, in Italy, in Spain and in France, as opposed to where I am. So we don't compete more or less on a direct basis. But they are sitting there saying, "We will become the marketers for other people because we don't want to take possession and have that risk."

The lobster processors

It is difficult to estimate how much Nova Scotian lobster is sent to processors rather than being end-marketed live. This is because nearly all processing or 'canning' - though much of the product is actually frozen (see Table 6.2) - takes place in New Brunswick or Prince Edward Island, and the Nova Scotia Department of Agriculture and Fisheries only keeps track of how much lobster is processed within the province. One wharf buyer's explanation for the lack of processing facilities in Nova Scotia was typical:

Right now in P.E.I. and New Brunswick, the government subsidizes the wages. Here in Nova Scotia we've got the product, but we've got to sell our lobsters to processors in different provinces. If the government would give us the licenses to process lobsters there would be more activity, more work for us. But the government put a freeze on licenses for canning. Nobody can get a new cannery license in P.E.I. or New Brunswick either, but there's already some there.

But with the increased harvests of recent years, processing is key to the success of the LFA 34 fishery. It absorbs the lobster surplus at the beginning of the season, as well as the small, weak, soft-shelled, or damaged lobsters that could not otherwise be sold easily. If a legal aboriginal commercial summer fishery were ever instituted, processors would be the logical recipients of the softer-shelled lobsters that fishery would produce. A commission buyer outlined the expanded role of the canneries:

A few years ago when we bought lobsters [the prices] were too high for the cannery. We sold our lobsters to the States. But now it's turned around so that in the last five or six years the States never buys lobster before the third week of fishing because the price is too low down there. We can't sell it to those guys, so the lobsters go to the cannery. There used to be a lot of lobsters lost. People would buy them, put them in cars and have no sales. Even the fishermen would hold, and their lobsters would die. There were a lot of lobsters lost - fifteen to twenty percent. Nowadays it's not like that. They would go to the canners right away.

Some of the major New Brunswick lobster processors are the previously mentioned Paturel International of Shediac, the Blue Cove Group of Blue Cove, and Cape Bald Packers of Cap-Pelé. The major Prince Edward Island packer is Polar Foods International of Charlottetown, an amalgamation of six independent P.E.I. packers, formed in 1998, with a substantial infusion of provincial funding. In that same year, Polar absorbed Arisaig Fisheries, Nova Scotia's only licensed lobster processor. Sogelco International Co. of Montreal, a major exporter of seafood products, was Polar's last competition on the Island. It operated a lobster processing plant in Summerside, P.E.I. until the parent company went into receivership in May of 2001.

Historically, Atlantic Canadian processors were also the destination for surplus New England lobsters, but American catches have been so high in recent years that a processing industry has taken root in Maine. It remains to be seen whether lobster landings will continue to hold steady. If they do not, it will certainly lead to a situation of

Table 6.2. CANADIAN ATLANTIC LOBSTER PRODUCT FORMS

Product Form	Product Description
Frozen whole lobster cooked In brine ("popsicle pack")	Product cooked, graded, packed in laminated pouches with brine, sealed and blast frozen (10 per case)
Frozen whole blanched lobster (vacuum packed)	Lobster cooked for 2 minutes, the frozen immediately. Cooking is completed by end user for a fresh boiled taste.
Frozen whole lobster, blanched or cooked (vacuum skin packed)	Specialized technology allows for an extended shelf life of 24 months.
Frozen raw lobster tails	Tails individually quick frozen (IQF), individually wrapped in cellophane pouch, layer packed in 4.5 kg. box. (4 boxes per master).
Frozen whole cooked lobster	Lobsters are cooked and vacuum packed in light brine or wrapped in waxed paper.
Frozen whole cooked lobster (baby broil)	Lobster cooked in a liner, frozen, packed in 5 kg. carton.
Canned lobster paste	Consists of lobster liver and/or roe mixed with lobster meat, cooked, canned and retorted. Packed 24 and 48 per case.
Frozen lobster meat in cans (not retorted)	Lobster cooked, shucked. Meat packed in cans with brine, blast frozen.
Frozen lobster meat (vacuum packed)	Lobster cooked. Meat manually removed, vacuum packed, blast frozen. Whole pieces of meat, chopped and salad meat. Tails, claws, tail/claw combinations or knuckle meat are available. Package sizes according to your specifications.
Minced lobster loaf	Deboned lobster body meat packed in poly bags or vacuum packed and frozen.
Canned lobster meat, hot pack	Lobster cooked, shucked, packed in cans, sealed and retorted.
Lobster tomalley and roe mix	Manually extracted cooked lobster, frozen and vacuum packed. Master carton 6 x 5 lbs.

**Source: Canadian Atlantic Lobster
Promotion Association Buyer's Guide
(1998)**

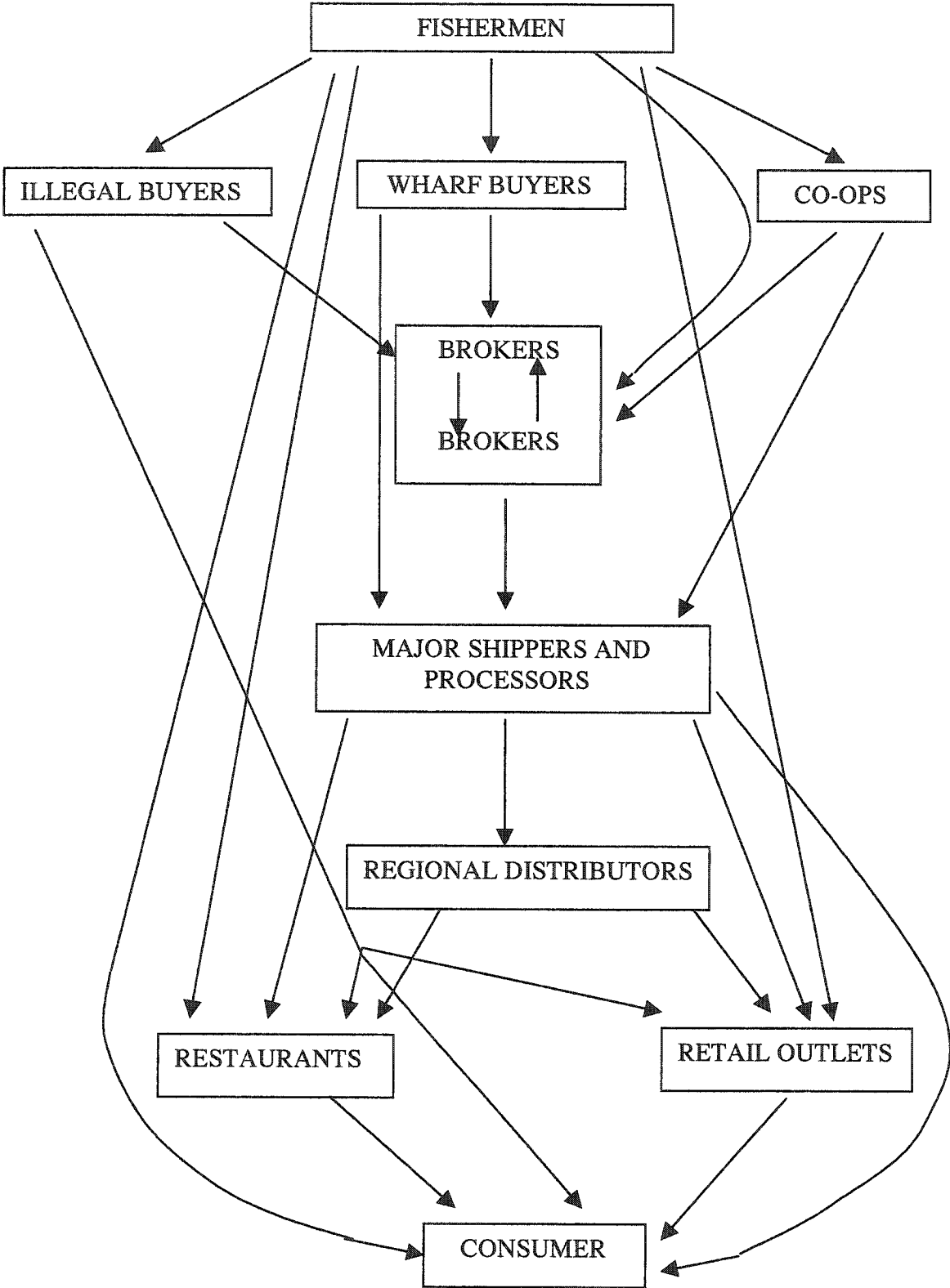
of lobster products continues to improve and to proliferate during this time of plenty, and if these products become acceptable replacements for the live animal in restaurants and grocery stores, it is quite possible that lobster could follow the course of nearly every other perishable food commodity: from seasonal to year-round availability at a steady price. Not coincidentally, such a transformation was the explicit goal behind the 'modernization' of the groundfishery, and specifically behind the creation of a dragger fleet (Bates 1944; Canada, Task Force on Atlantic Fisheries 1984).

Summary

I have argued that Atlantic Canadian lobster fishermen experienced nascent globalization with the establishment of lobster canneries in the mid-nineteenth century. The early canneries were founded on transnational industrial capital and expertise, and their presence in fishing communities transformed local cultures and altered indigenous economic and social relationships. But by the early twentieth century, lobster canneries in Southwest Nova Scotia had been displaced by the more lucrative live lobster trade, and the lobster marketing structure reverted to the mercantile form prevalent in other fisheries of the time. Since fishermen had no holding facilities, they were obliged to sell their catch to the local merchant as soon as they landed it. Like the fisherman, the local lobster buyer had few marketing options, and typically delivered his lobsters to the nearest lobster shipping depot, which was usually operated by an American proprietor. The lobsters were then shipped by smack to the pounds of the major lobster distributing companies in Massachusetts and Maine. The ground transportation system of the time effectively restricted the export market for live lobsters from Southwest Nova Scotia to the eastern seaboard of the United States.

The phenomenon of globalization has been made possible by improved communications and transportation technologies. Using these technologies, the global marketplace has transcended traditional barriers of space and time, and even a fragile, seasonal commodity such as live lobster can be delivered almost anywhere in the world, at any time of the year, on a moment's notice. Until the late twentieth century, the live lobster

Figure 6.1. THE FLOW OF LOBSTER FROM FISHERMEN TO CONSUMERS



market was structured by severe time and space limitations. Lobsters could not be held very long, or shipped very far, and local fishermen and lobster merchants had very little information about or access to the end market for their commodity. But with the improvements in transportation and communication that began in the 1960s, small entrepreneurial firms such as Clearwater found ways to bypass the conventional linkages above and below them that had previously shackled lobster dealers to a fixed position on the marketing chain. Air shipment allowed entrepreneurial dealers to expand into untapped international markets; improved communications and ground transportation allowed them to deal with a greater variety of suppliers at lower levels in the marketing structure; and sophisticated storage facilities eliminated dependence on a constant supply of fresh product. Globalization is characterized by 'hypercompetition' (Mittelman 2000: 16), and the expanding market, increasing catches, rising prices, and technological advances also encouraged a new breed of dealer to venture into the lower reaches of the lobster marketing structure. The new 'competitive' wharf buyers were 'lean and mean'. By dispensing with the trappings of the patron-client relationship they could offer fishermen a higher price for their catches. And some fishermen also responded to the hypercompetitive marketplace by forming small producer's cartels to jointly market their catch. As the flow chart (Figure 6.1) illustrates, the pressures of globalization have made the lobster marketing structure less of a chain, and more of a hypercompetitive web. The net winners in this structural transformation are the lobster fishermen at the bottom, and the major shippers and processors at the top. The fishermen are now able to play off buyers from several levels of the marketing chain to obtain the highest price for their catch. The major shippers and processors can play off suppliers at all levels of the marketing chain to obtain the lowest price, while still effectively controlling the end market. The losers in this transformation have been the traditional wharf buyers and lobster brokers, who continue to rely on fishermen for their product and higher-level dealers for their sales, but face intensified competition on both fronts.

Chapter 7

THE LABOUR PROCESS: CHANGING RELATIONSHIPS IN PRODUCTION AND EXCHANGE

The labour process in the lobster industry, as in any industry, involves human activities and relationships leading to the production and exchange of a commodity. In this chapter I discuss how the job of being a lobster fisherman has changed over the last fifty years, and how the relationships between the people connected with the harvesting and marketing of lobsters have been altered. I consider the changing roles of lobster captains, crews, lobstermen's wives and relatives, and fish buyers. I conclude with the effects that these changes have had on fishing households and fishing communities. All of these changes can be tied to aspects of a globalizing economy. Imported technologies have recast the lobster commodity production process. International demand has increased lobster prices dramatically, encouraging captains to invest heavily in their fishing operations, thereby distancing themselves as a class from their crews. The high cost of entry also raises questions of justice in fairness of distribution, since most crew members cannot reasonably expect to become captains themselves.

At first glance, the labour process¹ of the Southwest Nova Scotia lobster fishery appears to have changed very little since the Second World War. The lobster industry did not pass through the 'Fordist' phase of industrialization, encouraged by a government policy of rationalization, that dramatically restructured the labour forces of most other Atlantic Canadian fisheries (Apostle et al. 1998: 270). The LFA 34 lobster fishery has remained an owner-operated small boat enterprise. Most full-time crew members continue to work as 'co-adventurers', fishing for 'shares' (a specified percentage of the catch) rather than for wages. Lobster landed in Southwest Nova Scotia continues to be exported live, and because a local processing industry has not emerged, there are still relatively few plant workers employed in handling lobster. In short, the visible structure of the labour process of the lobster fishery - the categories of players in this process and the basic productive

¹ According to Marx, the 'labour process' is the way in which a naturally occurring resource (such as lobster) is converted into a commodity that is valuable for use or exchange (Marx 1977: 283ff.)

functions performed by each - has changed very little in fifty years. Nevertheless, striking changes have taken place in two general areas. First, the productive capacity of the labour force has increased; and second, many of the socioeconomic relationships that necessarily exist between the players in the course of production and exchange have been redefined. This chapter focuses on the organization of the labour process within the LFA 34 lobster fishery today, with specific attention to the intensification of fishing effort, and to a number of recently redefined human relationships involving captains, crew members, and other members of fishing households.

I have based my discussion of the LFA 34 labour process largely on data derived from interviews with the stratified, systematic sample of twenty-nine lobster license holders. These twenty-nine captains constituted a representative cross-section of LFA 34 lobster license holders from several standpoints. There were respondents from each of the seven settlement areas discussed in Chapter 2. The sample included fifteen fishermen with English and fourteen with French surnames. While all were fluent in English, French was the preferred language of twelve respondents. The youngest skipper was thirty years of age; the eldest was seventy-four. The median age was forty-six. These were experienced fishermen, with a median span of twenty-five years working in the lobster fishery. Only one of the twenty-nine captains had been fishing lobster for less than ten years. Nine of the respondents had acquired their captain's licenses within the last six years, but another nine had held licenses for thirty years or more. The sample included a wide range of fisherman from different communities, cultural backgrounds and life stages, and interviews elicited a diversity of descriptions, thoughts, and opinions concerning the lobster fishery.

Division of Labour in a Lobster Fishing Enterprise

The division of labour varies among lobster fishing enterprises, but typically the labour force consists of the captain, one or two full-time crew members, and one or two temporary crew members taken on during busy periods. In the majority of cases, one or more of the crew members is a family relation of the captain. The captain's wife is also likely to participate in the enterprise ashore, perhaps by keeping the books, assisting with

vessel and gear maintenance, or running errands. Unless there are extenuating circumstances², the captain is legally required to be aboard the vessel during fishing operations, and he normally operates the vessel, makes fishing decisions, and usually also works with the crew hauling traps. Some older captains will leave most of the physical labour to crew members, generally compensating them with higher pay. If they are paid in shares, full-time crew members, as co-adventurers, are usually expected to help the captain prepare the vessel and gear during the summer and fall preceding fishing season for no additional wages. Some captains hire temporary crew members on a daily or weekly basis to supplement the regular crew during the peak landing periods in December and the late spring. During these periods some captains will also hire a 'bander', whose job is to immobilize the claws of the lobsters once they have been removed from the traps.

The basic occupational roles and divisions of labour aboard a lobster vessel have changed very little in fifty years, but fishing effort has intensified. Captain and crew fish more hours per day and many more days per year than they did in the past. A captain from Wedgeport contrasted the pace of the fishery in his father's day with the competitive pace of the fishery in recent years:

My father had his rig paid for by the time he was forty-five, so if he felt like it he could come home early, especially if the weather was bad. Now, people are much more competitive. When they are out in bad weather they will call you on the radio and say, "Tell me when you're coming in, and I will come in too." Nobody wants to be the first to quit. The boats are competing with each other, and the individual crew members are competing. It's, "Who's going to catch more lobster, who's going to come in first?" They've got bigger boats, and they're pushing it. They're putting in extra traps, over the limit. Everything's getting bigger, the pots, the boats, the horsepower. And people are working too many hours. They've got to have some time off. They've got families they have to look after, but they're coming into the wharf at seven at night, and sometimes at two in the morning. There are some people around here who would be happy to catch two hundred crates³, but there are others who catch five hundred crates and are unhappy they didn't catch seven hundred.

Many captains "go at it harder" today because they are carrying much higher capital costs, but the fact that they are capable of intensifying fishing effort is due largely to

² Acceptable extenuating circumstances include illness, and attending industry-related meetings and conferences.

technological improvements in vessels, gear, and navigational equipment. In the past it was simply too dangerous to fish lobster forty miles offshore at night in the middle of winter. I talked to a thirty-two-year-old skipper who had just bought his license three years earlier. He steamed five hours to reach his winter fishing grounds. By the end of December, he was making thirty-hour round trips in his forty-five foot fiberglass boat, hauling traps day and night, constantly relocating them to stay ahead of the lobsters as they made their annual offshore migration. As he followed the lobsters inshore in the spring, he and his two crewmen put in a more 'relaxed' day, leaving at three in the morning and returning at seven or eight at night. In the 2000-2001 season they caught 50,000 pounds of lobster, grossing about \$350,000. It was a 'good' year. The young captain netted about \$75,000 after his expenses:

Where we fish now, there used to be four boats. Now, I wouldn't be afraid to say there's twenty boats. They're all trying to catch the same lobsters over the same bottom. They can't do it. We dump our pots now where we should only be getting to by Christmas. We used to start inside and work our way off. We can't do that anymore. We've got to try to go outside everybody and then try to jump again, jump again. We're fishing places that were never fished before. There's nothing like this effort - nothing like it. But we're still catching lobsters. [More boats] just keep coming and coming, even though people say there's no way the stocks can stand any more.

I asked twenty of the captains what they felt was the biggest change in the lobster industry since they had begun fishing, and fifteen of them cited technological advances. Six captains felt the biggest change was in improved electronic fish-finding and navigational equipment:

When I fished with my father, we had radar and a fish finder. That was it. Now we have plotters, colour sounders, plus some computers on board that show us a map of the bottom. The lobsters can't compete with that! When my father started, all they had was a bare boat. They went with a clock or a watch. They'd go for so many minutes by the compass. There was no competition like there is now. Now, you see a boat coming through and he dumps his traps. How does he know where to dump? He knows because he's got electronic support that tells him where to dump. If he wants to dump in a certain spot, his computer shows him where it is. If you see a good fisherman dumping, you'll dump right next to him. In the old days you wouldn't have a clue where you were, but now you do. It's all stored in your electronics.

³ Two hundred crates per year: a crate weighs one hundred pounds.

Four captains called the introduction of the wire lobster trap the most important change, and two others mentioned it as important. Much lighter than the wooden pots, the steel traps are easier to haul. They are flat, rather than rounded, so they are easier to stack on a boat or a wharf. But most important, the wire traps are more durable than the old wooden ones, so they can be placed in rougher water and left out over the winter. In fact because wire traps rust more quickly on land than in seawater, most fishermen try to avoid landing them until the end of the season, and fishermen fishing illegal, untagged traps often leave them underwater year round to avoid detection. According to a fisherman from Wedgeport,

When I started out with Dad, we were fishing the Rip, Soldier's Ledge [an area known for its treacherous currents]. But if it was blowing twenty-five miles an hour the next day, you would take all your pots out of there and try to put them down [in deeper water] between twelve and twenty-five fathoms. Today, even if it's blowing thirty-five, you leave them there. It's the wire pots, eh? If they get bent you just straighten them out and put them back in. Wooden pots were just nails and bows [and therefore fragile]. Now, if you've got a wire pot, you don't lose your catch. With wooden pots you wouldn't catch half the lobsters. And now there is more effort. It used to be, the week after New Year's, everybody was hauled up. Now you don't see many people hauled up. They just leave their gear there over the winter, maybe go once or twice a week in January, February, and part of March. But in the old days, the wooden pots wouldn't hold up [over the winter].

Many lobstermen, particularly those fishing the midshore, now use trawls of ten to twenty pots rather than 'buoy gear', and this change was ranked of first or second importance by five respondents. Sixteen of the twenty-nine captains interviewed used trawls exclusively, and three used a combination of trawls and buoy gear. One captain compared the changeover to trawls with the switch from fixed to mobile gear in the groundfish fishery:

The biggest change in the lobster fishery? Trawls, I guess. Buoy gear to trawls. It's kind of like the longline to the dragger. Trawls are covering more ground, right? You're always moving them. You're hauling them on the boat and taking them a little way. You're covering more of the fishing ground.

Trawl fishing has been made possible by larger, more powerful fishing vessels. The new vessels have the large, wide decks needed to accommodate up to twenty traps at a time, and open sterns so that a string of traps can be hauled from the rear of the boat, unlike buoy gear which is hauled from the side. Hauling trawls also requires a more powerful

engine. The rhythm of the labour process is different as well. A vessel fishing 'pairs' must move quickly from buoy to buoy, making two hundred hauls in a day. A trawling vessel needs only twenty to forty hauls to service four hundred traps, and there is likely to be an extra crewman to help unload them. The speed of trawl fishing allows the captain to cover a larger area, to relocate traps on a daily basis, or, during peak fishing periods, to haul his traps twice in a single day. As fishermen point out, trawls have allowed lobstering to become a 'pursuit' fishery, in some ways similar to the groundfish dragger fishery. But trawl fishing can be dangerous as well. When a heavily anchored trawl of twenty traps is dumped rapidly from the open stern, a crewman tangled in a coil of the warp line will go with it.

Only three captains cited the unforeseen increase in the LFA 34 lobster population as the most important change in the lobster fishery, but the increased availability of lobster coupled with significant rises in price and demand are the ultimate driving forces behind the new level of fishing intensity. There is much more money to be made, particularly in mid-winter when prices are highest, and this has driven many captains to brave winter weather and darkness in pursuit of lobsters on their winter migration grounds up to fifty miles from shore.

From Generalists to Specialists

Another reason that effort has intensified in the lobster fishery is that now the majority of lobster fishermen rely almost entirely on the six-month lobster fishery for their yearly income. This was not always the case. Fifty years ago, the fisheries of Southwest Nova Scotia were renowned in the province for the remarkable diversity of species harvested, the overwhelming predominance of independent small-boat fishermen and small fish packers and processors, and the twelve-month fishing season due to ice-free harbours. While they did not match the sheer volume landed by otter trawlers in Halifax and Lunenburg, the Southwest fisheries directed for high value species such as lobster, scallops, swordfish and tuna. The lobster fishery was Southwest Nova Scotia's most valuable asset even fifty years ago, but commercial catches for two dozen species were listed in the 1949 Fisheries Yearbook (Nova Scotia, Department of Trade and Industry

1949), and there were important Irish moss and rockweed harvests. Back then, most of the lobster was caught in December, April and May. Because so many species were available, most small boat fishermen in the area were 'generalists'. They pursued a variety of species as each became available in season. The practical advantage of this strategy was that the success of a fishing season wasn't tied to the availability of a single species. Lobster fishing was a natural part of these seasonal rounds for many fishermen. Anyone could purchase a license for twenty-five cents, traps could be built at home, and just about any type of boat was suitable. Today, limited entry and the inflated cost of a license and gear have combined to make lobster inaccessible to most generalist fishermen, and the decline of other fish stocks has convinced most of the lobster license holders to become 'specialists'. About half the lobster captains interviewed held licenses for other fisheries and all but one had experience fishing for other species, but only three reported spending more than two weeks in the last year going after anything but lobster. This was not necessarily by choice. As a younger captain put it,

We used to go longlining. In the summers we used to do that a lot. Now, with the quotas the way they are, they don't give us any fishing at all. All the fish went to the dragger sector. The hook and line - which doesn't hurt the fisheries at all, I mean, anyone with any common sense knows that - got axed. We got two weeks of fishing this year. And I've got all the licenses for that too. We could be out there now if they'd let us go. Give us some of the dragger fish and we'd have a good summer's work. My men wouldn't be on unemployment. It's sad. It really is.

An older skipper thought he knew why the federal government had given the dragger fleet most of the groundfish quota:

They did seem to want to keep the fishermen who were contributing to the local economy. What they wanted to eliminate was the small handliners who were making about \$12,000 a year, and then claiming unemployment insurance and getting an additional \$14,000. Now if you have a guy with a fish dragger who brings in \$100,000 worth of fish and hires three guys, they look at this as supporting the community, which is not fair, really.

This captain's analysis accurately depicts a long-term trend in federal fisheries policy that began with Stewart Bates' Report on the Atlantic Sea-Fishery (Bates 1944) and was reiterated by the Kirby Task Force almost forty years later (Canada, Task Force on Atlantic Fisheries 1982). Both reports attribute the low incomes of fishermen to inefficiencies in harvesting techniques and poor integration of the harvesting, processing

and marketing sectors. The Bates Report argued the superiority of the fish dragger over other fishing gears for the efficient harvesting of groundfish, and recommended government subsidies for an expanded dragger fleet. The Kirby Task Force prioritized economic viability over maximized employment in the fishing industry (Canada, Task Force on Atlantic Fisheries 1982: 186-7) and noted what it considered an untenable dependence of many fishermen on Unemployment Insurance (UI) (310-1). The Task Force argued that fishermen's low income levels were at least partly caused by 'excess harvesting capacity' (too many vessels - and fishermen - chasing too few fish). It recommended the Individual Transferable Quota (ITQ) system as a solution, while admitting that this might "...remove persons from the fishery in areas where there were few employment alternatives..." (Canada, Task Force on Atlantic Fisheries 1982: 219-21). In recent years, the DFO has assigned most of the groundfish quota in Southwest Nova Scotia to the dragger fishery. Individual quotas in the hook and line fishery are so small that most fishermen feel they are not worth gearing up for.

Redefined Relationships in the Labour Process: The Captains

With increased capitalization and debt, intensified lobster fishing effort and competition, and a trend toward specialization in the lobster fishery, relationships between those involved in producing the lobster commodity have changed. In this section I will discuss how relationships have changed between lobster captains and the people they work with and rely on: other lobster captains; lobster buyers; crew members; and other members of the fishing household, particularly their wives. I will begin by discussing how lobster captains relate with each other.

Relationships on the fishing grounds

There is an underlying tension in the LFA 34 lobster fishery because some of the captains are disturbed by the recent intensification of fishing effort. These fishermen are the 'artisans', preferring to catch lobster in the traditional way, staying 'inside' - close to shore - and fishing one to three traps on a buoy. They have laid claim to their favourite spots, and they don't move their traps very much from day to day or from year to year. In mid-winter, when inshore catches fall off, these fishermen are more likely to haul out their

gear and take some time off until the water warms up. At the other extreme are those who could be called the 'capitalists', fishermen who 'go at it hard.' They have more money invested in sophisticated gear and longer, wider and more powerful boats, and they are highly mobile. Rather than waiting for the lobsters to come to them, they try to follow the lobsters as they migrate to deeper midshore waters in the winter, and then return inshore as the shallow water warms up in spring. These fishermen use trawls, strings of from ten to twenty traps marked at each end by large 'balloons', rather than the buoy gear used by more traditional lobstermen.

Sixteen of the twenty-nine skippers interviewed fished trawls exclusively and three others used a combination of trawls and buoy gear, though not all of them were highly mobile. Inshore 'artisan' skippers fishing buoy gear appreciate that many of the more aggressively mobile trawl fishers are younger men with major loan obligations to meet, but they are irked by the fact that some of these trawl fishers routinely invade 'their' inshore territory in the late spring. Not only do the trawlers intercept the inwardly migrating lobsters the inshore fishers are waiting for in the spring. Some trawlers follow the migrating lobsters right into shore, laying out their long strings of trawls across the inshore fishers' gear and causing serious snarls. The smaller inshore vessels usually do not have the power to shift a twenty-pot trawl off their own gear. The problem is exacerbated when offshore fishermen don't take the time to shorten their deep-water trawl lines for shallow inshore waters, making tangles even more likely. One inshore fisherman expressed the frustrations that had finally driven him to offer up his license to the highest bidder:

It doesn't really matter to me in the winter because the offshore guys are offshore, but in the springtime they come on my ground. I say 'my ground' because that's where I've fished all my life. And they take over. They've got way bigger boats, bigger rope and stuff like that. They don't look after me. So why should I worry about selling my rig to somebody else, somewhere else⁴? That's my attitude right now. Because nobody cares about me, why should I care about them? It pisses you off. They just follow the lobsters around. They take the cream. They catch three times the lobsters I do in the fall. Then they come in the springtime on my ground, and overfish the ground. I used to do just as well in the spring as I did in the fall. Right now it's getting worse and worse. There's too much gear for the lobsters down there. And these [trawl fishermen] are local guys, but you just can't talk to them. It's so

⁴ Traditionally it has been considered poor form for a captain to sell his lobster license outside of his own fishing community.

frustrating. That's why I'm selling. The fall is no problem, because they're all gone. There are only a handful of boats where I fish in the fall, but in the springtime it's unbelievable! And the offshore people are catching from five to seven thousand pounds on the first day of the fall season. That's a lot of lobster, and that's why the spring doesn't matter so much to them, because they've already made it, which I haven't. If I catch two thousand pounds the first day, that's very good. And their catches hold up because they're in deep water. Even when the water gets colder it doesn't affect them as much as me, because I'm in shallow water. It cools off slower outside.

Another fisherman was more concerned with tangled gear:

I only go out six, seven miles now. I used to fish in the twenty-mile range. I fish pairs. I would be just inside the major trouble [that occurs a little further offshore], but there is getting to be more and more trawl mixed in with the buoy gear where I fish. That's in the last couple of years. And it's a lot harder for us to haul pairs from underneath twenty-pot trawls than for them to haul twenty-pot trawls off the top of two pots. For the most part, where I am it's not a big problem yet. But I can foresee it becoming a problem if the lobster still show signs of migrating inshore in the month of May. It's like two seasons and two fisheries, actually. There's the winter season, when we're virtually shut down until April. And then there's the inshore and offshore [more precisely 'midshore'] fishing within the inshore licenses. Most springs there doesn't seem to be a lot of lobster offshore late in the spring, so the offshore boats start moving in. But it's hard for us to move out, because our boats are not set up for it. It's no problem for them to move in. We call them the 'roamers'.

James Acheson described the community-based customary allocation of fishing spaces in Maine twenty years ago in his classic study, **The Lobster Gangs of Maine** (1988). Fishing harbour communities laid claim to adjacent stretches of ocean, as if the lines bounding their communities stretched out to sea. Within each claim, local lobstermen negotiated their own fishing spots, and they usually restricted new entrants to the sons of local fishermen who had shown themselves worthy. There was no legal basis for this allocation system. It was done by custom, and enforced by extralegal sanctions, including threats and punitive actions such as cutting the buoys off pots. Maria Recchia (1997) described a similar tradition of spatial allocation on Grand Manan Island in New Brunswick. According to the accounts of older fishermen in Southwest Nova Scotia, a comparable system also existed in LFA 34 twenty years ago. As one fisherman explained,

There used to be 'invisible lines' separating lobster fishing places. There's not so much of that now. There used to be a little overlap between each community, but

they wouldn't be taking in the whole bay as they do now. When one community expands their fishing grounds, everybody does, and there is a certain amount of gear loss [from sabotage]. The more traps out there, the more chance of loss. But it's pretty well open. The license says you can fish anywhere in [LFA] 34.

Another older fisherman from Meteghan agreed with a final qualification:

There was an understanding years ago that there were lines on the land [that extended out to sea], and they [fishermen from another community] would never go up our way. That was the fisherman's law. If you set a trap there, you probably wouldn't find it. Now it seems to be changing a lot because the fishermen are going further outside. And they're coming inside our line. The fishery's getting better now, so we've got people fishing both sides of the line. There were imaginary lines, but there aren't anymore. But I'd still have problems if I took my boat to Yarmouth!

As discussed in Chapter 4, traditional, locally generated systems of allocative justice developed in the lobster fishery during a period when fishing communities were isolated and fishermen were relatively immobile. Fishermen depended on nearby fishing grounds for their livelihoods and federal fisheries officers rarely monitored their activities on the water, so informal conventions evolved to address issues of distributive fairness and conservation. When LFA 34 lobster fishermen became more mobile in the 1980s and began exploiting the midshore grounds further out to sea, these conventions no longer applied, because individual communities had not laid claim to the midshore region. Recchia describes an analogous situation on Grand Manan Island (Recchia 1997: 135ff.). At the same time, the Department of Fisheries and Oceans began taking a much more active role in enforcing lobster fishing regulations, sometimes in direct opposition to local fishing conventions⁵. Under these conditions fishermen increasingly turned to federal law and federal institutions such as the LFA 34 Advisory Committee, rather than local conventions, to resolve fishing disputes. A younger skipper expressed his approval of this turn of events:

Oh yeah, in the past it was like, what do you call those things, the McCoys and the Hatfields. No, that changed because everybody's there for a living. You don't want to cut the other guy's throat because you don't want to get your own throat cut. We're all in it to make a living, not more. If you get tangled, you untangle. You go inside or outside of the other guy. I tangle. But you don't cut the other guy's trap off first. It costs too much to do that. They're expensive!

⁵ A prime example is the "Pubnico Affair" discussed in Chapter 4.

Conflicts between aggressive trawl fishermen and traditional inshore fishermen are mitigated by the fact that LFA 34 covers a very large and productive area, and that entry to the fishery is limited. For the moment, at least, there really is enough lobster to go around. Access to the more distant midshore areas is relatively unrestricted, but captains still identify themselves as fishermen from one of the seven settlement areas and continue to defend what they consider to be 'their' inshore grounds on this basis. They are much less likely to try to defend the territory of a particular community within the settlement area, as they used to in the past. Within those communities, however, most fishermen continue to respect the traditional privilege of a local inshore buoy gear captain to stake out his personal fishing grounds on dumping day even while insisting on their own right, as specified by federal law, to fish anywhere they please within LFA 34. An ambitious young trawl fisherman explained,

As far as finding a place to dump your traps, it's really just wherever you want to go. There's a big bed of rocks all along the shore from down here to Cape Island. There's really a lot of places to go. Off the Island it goes all the way out to the Lurcher Shoals, so you can start inshore and go all the way off shore. Well, it can be hectic sometimes, but you get to understand the system and you get to know how other people fish, their gear and all that. So after you learn that, that's the biggest trick, to learn how the other guy is fishing alongside you. When you get to know that, it gets easier and easier.

As older captains retire, the younger captains who replace them enter a fishery where trawl fishing and high mobility are firmly established as legal and legitimate modes of operation. The DFO is not well positioned to mediate gear conflicts between trawl and buoy fishermen operating out of the same harbour. Such conflicts are easier to resolve at the community level. As the previous two quotations indicate, lobster captains in many communities are searching for a solution based on a synthesis of the utilitarian justice of the state (equal access under law) and local conceptions of fairness (everyone is entitled to make a living).

Relationships in fishermen's associations

"We realized years ago that we have to form a group, but we don't know how, so the government will always run the fishery" (quote from an LFA 34 license holder).

In fact, the DFO does require all lobster license holders to belong to a professional association of some kind, and there are at least a half dozen such organizations operating in Southwest Nova Scotia. Nevertheless, sixteen of the twenty-nine fishermen interviewed either said they did not belong to any industry organizations, or that they did not know which one they belonged to and had only joined because it was required. Responses varied significantly by settlement area. Eight of the nine captains interviewed in the less productive Digby County lobster districts of Digby Neck and Islands and Clare were quite clear about their associational affiliations. The twenty fishermen in Yarmouth and Shelburne Counties were more likely to proclaim their independence from associational ties, and only five could name an organization to which they belonged. With the exception of the LFA 34 Advisory Committee, there is no organization in the region that represents lobstermen exclusively or comprehensively. Some of the existing fishermen's organizations are localized 'fixed gear' associations mostly concerned with the business of distributing the small groundfish quotas DFO had allocated to their members. As a skipper from Cape Island explained,

The only group I belong to is the Southwest Nova Fixed Gear group for the groundfishery. We have a group quota. We have to call in every day with what we catch. We don't have much quota, but it's all we've got.

Respondents who felt fishermen's associations were helpful in promoting the interests of lobster fishermen cited four organizations by name. These were the Bay of Fundy Inshore Fishermen's Association (BFIFA), the Maritime Fishermen's Union (MFU), the Yarmouth County Fixed Gear Association (YCFGGA) and the West Nova Fishermen's Coalition (WNFC). Membership in the first two is essentially confined to Digby County. Only fishermen from Digby Neck and the Islands claimed BFIFA membership. The MFU has a large membership in Acadian New Brunswick, but has very few members in LFA 34 outside of the Municipality of Clare. Membership in the YCFGGA was limited to the Yarmouth area. The WNFC aims to represent the entire LFA 34 region, but its membership is small. Only two of the twenty-nine respondents reported belonging to the WNFC. Its president, a former lobster fisherman, is also a prominent Yarmouth lobster buyer. An MFU official expressed his concern with the fact that most fishermen, and particularly those in the more productive areas of LFA 34, were not properly represented:

Right now I am an executive of the MFU and I represent sixty-eight fishermen from this area. The Bay of Fundy Inshore Fisherman's Association represents probably 125, but some of them are probably just groundfish fishermen. I'd say there's 800 lobster fishermen [in LFA 34] who don't belong to any organization. They're not represented by anybody. Now I'm not saying that the MFU or the BFIFA are the best, but if all fishermen paid dues to one association, say \$500 a year dues, you're talking half a million dollars. You could hire a good representative, a secretary, have an expense account and when issues arise we would have a spokesperson who speaks for every lobster fisherman in LFA 34. Right now, when I go somewhere, I only speak for sixty-eight of them.

But many fishermen were wary of being represented by fishermen's associations. They preferred to deal directly with the DFO or through the Advisory Committee on contentious issues because they felt that independent fishermen's associations would inevitably be controlled by the wealthier and more ambitious captains. A fisherman from Wedgeport explained,

The problem with going through an association is you're going to have the richer fishermen fighting against the poor ones. That's the way it's done now. This happens when we go to meetings here in Wedgeport. We have to run our own wharves now⁶, so we have a [wharf] committee of eight or nine. Five or six of them are offshore fishermen and only three are inshore. They always outvote us [inshore fishermen] for anything we want. It would be the same thing [if we were all members of one association].

Recently, in response to the Supreme Court's Marshall Decision giving aboriginal people the right to fish commercially, a new industry organization emerged. The Atlantic Fishing Industry Alliance (AFIA), as its name suggests, is an organization of organizations. It lists as members nearly all of the fishermen's organizations operating in Southwest Nova Scotia with the notable exception of the MFU. It has also enrolled most of the area's fish buyers and processors. In fact, the coordinator and chief spokesperson for AFIA, Denny Morrow, is also the Executive Director of the Nova Scotia Fish Packer's Association (NSFPA). The AFIA is relatively well funded, partly by the federal government. It has produced a lengthy and careful legal critique of the Marshall Decision, which is available on the NSFPA web site. Denny Morrow was interviewed frequently by the news media as a spokesperson for the lobster fishermen on this topic when it was a headline issue.

⁶ In recent years the DFO Small Craft Harbours Branch has turned over management and maintenance of many of its small fishing harbours to local Port Authorities under the federal Port Divestiture Programme.

While the majority of the skippers interviewed, particularly those outside of the Yarmouth area where it is based, were not familiar with the AFIA (or the 'Alliance' as it is more popularly known) by name, most were familiar with Denny Morrow in his role as spokesperson for the industry. One captain gave a nicely balanced account of the AFIA:

I think, with all the turmoil going on now, especially with the native fishery, I think there is a place for them. And I think they're doing a decent job, and they're making sure that government is listening to them. And there's a lot of smaller groups that need somebody like that, that don't have enough members to represent themselves and set up a committee that's workable and that can finance itself. But it's hard for a big organization like that to talk on behalf of everybody. But you need something, you need contact people who at least know where to go to find somebody. They do represent the lobster fishermen in a roundabout way, though I do think [through the LFA 34 Advisory Committee] we can represent ourselves. But we need someone like that. [Denny Morrow has] put in a few letters to the editor of the Halifax paper that I thought were very well done.

But while many fishermen shared concerns with the AFIA over the impact of a commercial aboriginal fishery, few were enthusiastic about being part of an organization founded by fish processors. As an MFU executive explained,

The MFU did not join the Alliance. We were behind the issues, but the Alliance was formed right after it was mentioned that the Marshall Decision should only impact inside of three miles, that the Indians shouldn't have a right to fish outside of three miles. I don't know where they dug that up. What happened there, bigger companies joined the Alliance, food processors joined the Alliance, a couple of inshore fishermen's groups joined the Alliance. The BFIFA and the MFU did not. We saw this as an attempt to get the inshore fishermen to support the idea that there would be no native activity outside of three miles. This is a 'big company' problem, not an inshore fishermen's problem, so we didn't see any reason to support it. Some of the inshore groups later wondered whether they should have joined, but they decided to stay in just to get information. But we [the MFU] weren't ready to get in bed with the big companies at this time.

Since the issues around the commercial aboriginal fishery have been largely put to rest in Southwest Nova Scotia, interest in the AFIA has faded. Fishermen who are concerned with the fair and effective representation of LFA 34 license holders as a group have focused their efforts on improving the mechanisms of the LFA 34 Advisory Committee rather than on creating an independent fishermen's organization.

Relationships between Captains and Lobster Buyers

The evolution of the port market for lobsters has been discussed extensively in Chapter 6. In principle it has evolved into a seller's market as an unprecedented array of buyers competes for the fisherman's daily catch. Like the owner of any small business, the captain is ultimately in charge of production and marketing strategies - in this case, how, when, and where to fish, and how to dispose of the catch. But license-holding skippers with major financial obligations are not necessarily free to make all of these decisions unilaterally, and such obligations have always been a factor in the lobster fishery. Lobster buyers have traditionally 'backed' lobster captains, extending them credit to purchasing vessels and gear on the condition that the captains agree to sell their entire catch to them, often at a non-negotiable price. This simple 'patron-client' relationship continues in many cases, but the advent of limited entry and the subsequent inflation of license values has also prevented many qualified fishermen from obtaining licenses, while allowing certain well-to-do lobster buyers to gain direct access to the resource itself. These buyers have circumvented the restriction of licenses to 'owner-operators' by purchasing licenses and then nominally assigning them to 'captains' who are in effect, and for all intents and purposes, their own employees. When I questioned DFO officials on the legality of this practice, they replied that while the practice violated the spirit and intent of the 'owner-operator' stipulation, it had been supported consistently in the courts as a valid 'civil agreement' between the buyer of the license and the nominal license-holding captain. One of the DFO managers I spoke to feared that captains without a personal investment in the fishery would be less committed to conserving the resource:

One thing that concerns me is the level of licenses that may not be owned by the operator. I guess I'm a firm believer in 'owner-operator'. I think that's the way the fisheries should be run, because when a person has a personal stake in the operation itself, when he's the one out fishing, he sees and feels what he's doing. I think he is a better representative of his fishery than somebody who's just an employee, who doesn't give a damn. An employee is going to do what he can to make as much money as he can in the short term because he's here today, and he could be gone tomorrow.

Some fishermen were seriously concerned that this state of affairs stifled the voices of genuine owner-operators as they sought to participate in the policy-making process through the Advisory Committee:

We've pretty much figured out, those of us who are in it, that half the LFA 34 licenses are company-owned. Yeah. So that's half you're not going to get to say anything, right? Then you've got the other 480 licenses. Some of these licenses are held by individuals who have been in the fishery for a long time and they've done well. They've got everything paid for, so they just stand in the background. Then you've got 250 or 300 licensed fishermen with everything on the line, like myself. You're in it. You're not going to leave overnight. You're in it long-term. Those are the guys who are really fighting. Those are the ones you are going to hear. Some of the older fishermen, they've got enough funds, they've got everything paid for. It doesn't really matter to them which way it goes. Then you've got the ones like myself who you know are in it for the next fifteen years, come hell or high water, no matter which way it goes. We're the ones who are trying to keep everything going in the right direction.

This captain's analysis represents an extreme view that was rejected by lobster buyers, DFO officials, and most fishermen subsequently interviewed. His concerns were, however, reflected to some degree in most responses. There was, for instance, unanimous agreement that, at the present time, one could not enter the fishery without 'backing' of some sort, whether it was from a parent, some other relative or trusting friend, a fish buyer, or a combination of these. The majority of respondents also felt that certain lobster buyers were in the process of gaining control of multiple licenses in order to guarantee themselves a steady supply of lobsters at an acceptable price. A fisherman nearing retirement observed,

With most of the young fellows who are getting into it nowadays, companies are buying their outfits. The license might be put in the young fellow's name, but the company really owns it. We feel that if a company gets too many boats, or if four or five companies have thirty boats, they're going to start running it and it's going to become like everything else. We're not really pleased with it. There are two companies in Yarmouth doing it right now. One company owns six or seven, another has five or six.

Perhaps the most serious concern of fishermen was that by gaining control of a majority of the lobster licenses, and thus, political control over the LFA 34 Advisory Committee process, lobster buyers could lobby for an Individual Transferable Quota (ITQ) system in the lobster fishery:

I grew up in a fishing village, and when I was a kid there was only one fish plant that owned boats. Everybody else had their own boats, draggers, longliners, or whatever. Seven or eight years later I don't think there was one privately owned fish dragger in Southwest Nova Scotia. And I said back then, you're going to see lobstering go that way, and it's going that way now. The plants are buying four or five boats,

and you know they are not going to fish four or five boats if it comes to quota. They are going to put the quota of four boats onto two boats [as they did with the draggers]. This is going to put a lot of people out of work.

If lobster buyers gained control of a large percentage of the lobster licenses, they would also be able to manipulate the wharf price of lobsters to the detriment of independent fishermen. The Kirby Task Force documented this practice in the groundfish fishery twenty years earlier:

The price paid by plants for fish delivered by offshore trawlers owned by the same company is artificial, because seller and buyer are one and the same. Such a price is usually called a 'transfer price'. It is often argued that the price is therefore set unreasonably low, causing the trawlers to lose money, thereby establishing a low norm for inshore prices (Canada, Task Force on Atlantic Fisheries 1982: 40).

Fishermen's fears about increasing company ownership may be overblown. For instance, only one of the fishermen I interviewed admitted to holding a license that was actually owned by a lobster buyer. Still, seven license holders refused my request for an interview and it is conceivable that some of these were operating with licenses owned by lobster buyers, and preferred not to share the details of their operations with a stranger. Therefore it is possible that the sample does not properly represent the position of a significant fraction of LFA 34 license holders. The skippers I interviewed almost always expressed a commitment to the small boat fishery and the principle of owner operation of a lobster rig. However, considering that there were relatively few interview refusals, and since the sample was fairly large and represented a wide range of geographic locations and operational types, it is also possible that some of the respondents *were* operating with licenses owned by lobster buyers, but preferred not to share this information with me.

Ordinary fish buyers are not the only group accumulating multiple licenses. Individual captains and groups of captains, especially those with lobster buyer's licenses, are also buying additional lobster rigs. While none of the respondents admitted to this practice, one was identified by other fishermen as a multiple license-holder, several confessed to having the aspiration, and many reported knowing other captains or groups of captains who had done so. One fisherman explained,

People used to earn enough to buy a license working in the back of the boat. Now there are a few are father-to-son pass downs, [but] I know one situation where there's a father and two sons and they own multiple licenses. I hear they own seven now, and they have employees running the four other ones. The thinking is, if you own one license it's not hard to pay for a second one, because if you have one that's paid for, it can help pay for the other one if it has to. Most captains are incorporated now, so they'll hold both licenses within the same corporation. They have different ways on how they run the second license, but the [hired] captain probably makes about twenty-five percent of the catch. About twenty-five percent will be split by the crew members, so that leaves fifty percent to run it and pay for the boat. I have a friend who owns two licenses. In December, in the winter season, he has somebody run one and he runs the other one. In March he just takes the one crew that he needs, and that would be the captain from the other boat. He takes one boat one day and he hauls those traps. Then he takes the next boat the other day and hauls those. He's boat-jumping every day.

It is difficult to estimate the extent of this practice, but the trend toward multiple license-holding is very real. This trend could threaten the 'owner-operator' mode of production that distinguishes the lobster fishery from others, and which, in the opinion of many participants, has uniquely protected the lobster fishery from rampant overfishing and a stock collapse.

Relationships between Captains and their Crews

Based on a 1961 survey, Rutherford, Wilder and Frick (1967: 24-5) reported that the usual crew of a lobster boat in Southwest Nova Scotia consisted of two men, the captain and a helper. Of the seventy-three vessels they surveyed, twenty-five were manned by the captain alone, forty-five were manned by a captain and helper, and only three had three men aboard. Crews are slightly larger today. Of the twenty-nine captains I interviewed, nineteen fished with three men (including themselves) aboard (Table 7.1). Six vessels sailed with two to three aboard, depending on the time of year, and only one sailed with just two aboard throughout the season.

Table 7.1. NUMBER OF PERSONS (INCLUDING CAPTAINS) WORKING ON BOARD 29 LOBSTER VESSELS SURVEYED IN 2000

Crew Size	2	2 - 3	3	2 - 4	3 - 4	4	Total
Number of Vessels	1	6	19	1	1	1	29

As in the past, many crew members are related to the captain by family. In my survey, nineteen of the first-mentioned crew members (the equivalent of 'first mates') were so related. Nine were sons (including one stepson), four were brothers, two were fathers, and one was a wife of the captain. There were also two sons-in-law and one brother-in-law. However, very few of the second-, third- and fourth-mentioned crew members were family relations. Among them were just one son, one grandson, one brother-in-law, two sons-in-law, a nephew, and a cousin.

All but one of the first-mentioned crew members were paid in shares of the catch, rather than by wages. Shares for these 'senior' crew members ranged from a low of twelve and a half percent to a high of forty percent, depending on a number of factors. Captains with larger crews paid a lower percentage. Captains in Digby County, where catches are lower, gave their crews a larger share. While a majority of captains gave shares based on gross revenues, some captains fishing in southern Yarmouth and Shelburne Counties calculated shares based on *net* revenues after expenses, and this system accounts for all but one of the crew members who received a share of over twenty percent. Older captains who did less physical work, and especially those who worked with their sons, tended to pay higher shares. Given that the average LFA 34 lobster vessel lands nearly a quarter of a million dollars of lobster annually, that the season is only six months long, and that during January, February and March a vessel may go out only once or twice a week, these senior crew members are quite well paid on the average. Only about half of the second-mentioned crew members, and only one of the third- and fourth-mentioned crew members received shares, although in all but two cases these shares were equal to those received by the 'senior' crew member, reflecting the typically egalitarian division of labour between share-holding crew members. The rest received fairly generous wages ranging from \$850 to \$1500 a week, though in the latter case it was likely to be a seven-day week.

The majority of crew members receive shares rather than wages, and these individuals are legally considered self-employed co-adventurers with the captain in the lobster fishing enterprise. As such, they are usually expected to assist the captain in preparing

and repairing the vessel and gear in the fall, prior to the beginning of the fishing season, without pay. But although they are technically self-employed, changes in fishing employment legislation tend to identify crew members as employees of the captain. In the past, crew members were paid their shares directly by the lobster buyer, but now the captain is required to pay the share-holding crew members himself, and to deduct unemployment insurance payments (but not income tax payments) from their shares. A fishing captain is not required to enroll crew members in the provincial Workers' Compensation program unless he is employing three of them permanently at the same time, a rarity in the lobster fishery (Nova Scotia 2002: Citation 15). This is unfortunate because fishing is one of the most dangerous occupations in Canada, recording more work-related deaths and injuries annually than any other industry (Binkley 1995: 4).

The most important social trend aboard the lobster vessel is the growing class differentiation between captain and crew. The captain has always been the 'capitalist' in the sense that he owned the means of production, but a crew member's status as 'worker' was formerly prescribed on the basis of age, experience, and skill, rather than on the basis of class. Before limited entry and the subsequent inflation in the cost of purchasing a lobster rig, virtually any qualified crew member could expect to become a captain himself, eventually. Today, the majority of crew members cannot reasonably harbour this expectation for two reasons. First, it is unlikely they will be able to accumulate the capital necessary to purchase a lobster license, vessel and gear. Even the sons of fishermen cannot automatically expect to assume their fathers' enterprises since the capital gains tax involved in such a transfer can exceed \$100,000. Second, because licenses are limited and there are typically three persons working on a lobster vessel, there simply aren't enough licenses to go around, especially considering that lobster buyers and wealthy, already-licensed lobster fishermen are also in the market.

Today, lobster crew members are better paid than ever before, and many are quite satisfied with their situation. They make more money in six months than most workers in the region make in twelve, they are eligible for unemployment insurance during the closed season, and they do not have to take a capital risk as their captains do. As

employees they are, however, vulnerable in several respects. If the lobster stocks eventually decline and catches diminish (as nearly every captain interviewed expected they would), the value of crew members' shares will decline. If lobster buyers and other investors continue to accumulate licenses, crews can expect to be paid less for their labour because owners will be seeking the best possible return on their investment. This particular area of vulnerability is exacerbated by the fact that with modern fishing technology, workers with less experience and skill are capable of crewing (or even skippering) a lobster vessel, making the seasoned fisherman more easily replaceable.

Working Relationships between the Captains and their Wives

All but two of the twenty-nine captains were married, and one of those two was only recently divorced. While no women hold lobster licenses in LFA 34, the lobster fishery remains a household-based enterprise, and by many historical accounts, women have made significant and often essential contributions of labour and capital to the household-based economies of inshore fishing operations in Atlantic Canada. In addition, lobster fishermen spend most of their waking hours at sea during the peak fishing season, and when they are not fishing they are often at the wharf or fish shanty, repairing vessels or gear or simply socializing with other fishermen. Studies have shown that fishermen's wives are apt to be less socially isolated (Binkley 2003; Clark 1988; Porter 1985), and therefore might be expected to have a more informed understanding and appreciation of the social structures, institutions and boundaries of the local community. To gain a better understanding of women's contributions to the lobster fishing enterprise, and more insight into the communities in which these enterprises were situated, I conducted structured, in-depth interviews with seven lobster captains' wives.

Though they do not usually accompany their husbands on fishing trips, fishermen's wives, according to Dona Lee Davis, can play both instrumental and expressive roles in the household enterprise (Davis 1988: 214-22). Their instrumental roles may range from full partner in the fishing enterprise to unpaid - and often unacknowledged - subordinate labourer. A woman may also keep her husband's seasonal, marginal, or heavily indebted fishing enterprise afloat with wages she has earned, either at a fish plant, or in some

entirely unrelated profession (McCay 1988: 118; Sinclair 1985: 144). And as MacDonald and Connelly demonstrate, an accurate determination of the class positions of husbands in the fishing industry must take the work of their wives into account (MacDonald and Connelly 1989: 66). Davis argues that fishermen's wives can also play a vital expressive role in sustaining the household enterprise by supporting - or serving - their husbands emotionally, and defending them from criticisms in public situations (Davis 1988: 224). In addition, since fishermen spend so few of their waking hours at home, their wives are likely to shoulder a larger than average proportion of the household domestic work. This condition does not seem to have been altered significantly by current platitudes concerning gender equity, or by the increasing employment of married women outside of the home (Apostle and Barrett 1992: 268; Binkley 2003; Sinclair and Felt 1990).

The literature also suggests that, apart from their direct contributions to the fishing household economy, women are also more active than men in community affairs (Davis 1988: 227; Davis 2000: 346; Nadel-Klein 1988: 191; Porter 1987: 52). They are more likely to belong to voluntary organizations, and to attend church and participate in educational activities (Apostle and Barrett 1992: 270). Fishermen's wives also usually have more formal schooling than their husbands do (Davis 2000: 350). Because fishermen's wives are much more likely than their husbands to have been born outside of the community in which they reside, they may also have a kin and social network that is geographically broader, and hence a more informed perception of the surrounding communities (Porter 1985).

Since interviews with the captains were nearly all conducted in the home, their wives and other family members were often present. A few wives sat in during all or part of their husbands' interviews, sometimes making comments, allowing me to get to know them. I chatted informally with several wives while waiting for their husbands to return from fishing. Seven fishermen's wives, four English and three Acadian, granted my request for a formal interview, and the following discussion is based, for the most part, on their responses. The sample is too small to permit generalization, but the women interviewed

do provide examples of the variety of ways in which women engage themselves in the household fishing enterprise.

Women's contributions to the fishing enterprise

All of the women interviewed cited contributions they made to the fishing enterprise. These ranged from simply discussing business strategies to full participation as a crew member. Four of the women did bookkeeping and clerical work. However, the financial management of a lobster enterprise has become increasingly complex, especially since many license holders have formed 'companies' or corporations. Cash flows can easily exceed a half million dollars a year. Most operations have major loan obligations. There are many new federal and provincial regulations to be followed, and payroll and catch records must now be kept. For these reasons, many fishing households now employ professional accounting firms:

I do a lot. He fishes, but I do the books. I pay the men. I help out as much as possible to take the load off him. Plus, it's a lot cheaper because I do it for nothing. We have an accountant who takes care of everything, but I put everything in order.

All but one of the women mentioned 'doing errands' as part of their contributions. Since most fishermen now carry cellular phones on their vessels, communications with their wives - including requests for services - are greatly simplified. As errands, the women reported picking up gear, parts, and supplies, ordering bait, and making business-related phone calls on a routine basis. None of the women interviewed reported any involvement in the sale or transportation of the catch. Only two of the women provided meals for the crew, and only on an occasional basis. One woman made lunch for the crew, but only when they were ashore, working on gear behind the house. Another sometimes purchased sandwiches or frozen meals for her husband to distribute to the crew on the boat.

Only three of the women reported doing 'physical work' - tasks such as boat and gear maintenance and actual participation in fishing expeditions. One woman's physical work was limited to occasionally assembling bait bags, but two women were heavily involved in gear maintenance, and both accompanied their husbands on fishing trips. One of them recalled:

I used to work in the fish plants. Lobster fishing was something I never knew before I met my husband. I was afraid to band a lobster - I wouldn't *touch* a lobster! And then, one day, my husband said, "Do you want to come?", and I said, "Sure!" Ever since that day, I've loved it. I do everything that a regular crew member would do, but I *don't* work on the books. I've been fishing four winters and five springs. I have a full-time professional fisherman's license. [To get one] you just go down to the DFO in town, tell them you want to go lobster fishing, fill out a form, that's it. We do buoy gear, and I can do everything the guys can, so even though the men complain, it's not that bad. Well, it's long hours and you're real cold, but it's not really dangerous if you're careful. Now, men say it's very hard doing trawls. It could be, but I don't know. I've told my husband I'd like to go out and see how trawls are done. I think it would be easier.

While the other woman rarely accompanied her husband on fishing trips, she felt very much involved in the enterprise:

I'd say it was a family enterprise. I help him a lot. I enjoy going out on his boat, and helping with his gear and everything. I run and get things for him. I'll help him put the little ropes he needs on his pots. I don't do the heads⁷. He has somebody else do them. I'm going to try it, though. And I'm going to make bait bags next year. I help him when he's building pots. I only go out once or twice during the lobster season because of the weather (laughs). I help sometimes, but I would probably be in the way, because the men are rushing around the boat. I do the books. If he needs bait, I make arrangements for that.

While all of the women had been employed at the time of their marriage, only one of the women interviewed was currently employed outside of the household lobster enterprise. She was a production and quality control manager at a major herring processing plant. Of the seven respondents she was the least engaged in the lobster fishery, but arguably the most influential in planning household economic strategies with her husband. Wary of a possible collapse of the lobster fishery when they were married, they developed a livelihood strategy to protect themselves. They established a 'bed and breakfast' in their Victorian home, which is near enough to the Yarmouth ferry to attract American tourists. Since his lobstering activities occurred in the winter, and her work at the plant was during the summer and fall, they could take turns managing the bed and breakfast while the other was at work.

In their comparative study of Nova Scotian and Norwegian inshore fishermen's wives'

⁷ The netting placed inside the lobster trap.

contributions to the household-based fishing enterprise, Thiessen, Davis and Jentoft found similar levels of Nova Scotian wives' participation in the areas of work I have discussed (Thiessen et al. 1992). They also found that while Nova Scotian wives were generally satisfied with their current level of involvement in the fishing enterprise, their husbands were likely to want their wives to become more involved, particularly in business and financial management tasks (Thiessen et al. 1992: 346). In my survey, most husbands and wives seemed content with the wife's present level of involvement (which several captains noted was lower than it had been in the past), though two captains expressed the hope that their wives would become more involved in bookkeeping tasks in the future.

Women and the fishing community

Six of the seven women interviewed were born in the settlement area where they now reside, though only two of them were born in their current village of residence. These two were also the only respondents who grew up in fishing households. Two of the six grew up in parts of Nova Scotia outside of LFA 34, but their parents were from the villages where they currently reside, and they have other relatives living nearby. The seventh woman had no family connections to Nova Scotia. She had met her husband by chance while attending a friend's wedding in the province. All of the women had children, and five had children still in school, so their children's education and recreational activities provided a natural bridge to interaction with the local community. Since their husbands did not spend much time around the house, especially during lobster season (which takes place during most of the school year), the women were obliged to fulfill most of the parental duties associated with child rearing. Since they also did most of the housekeeping tasks and "helped out" in various ways with the lobstering enterprise, it is not surprising that only one of them found the time to hold a paying job, and that one only seasonally. Contrary to the findings of other researchers (Clark 1988; Porter 1985), these fishermen's wives were not very active in formal community or political associations. Only one respondent reported doing community volunteer work on a regular basis, in this case for the regional school district. None reported belonging to any community, social or political associations, though one was active in church affairs. One

respondent expressed her frustration with the social isolation that seemed to come with being a lobster fisherman's wife:

Living with a fisherman, there's no plan. It all depends on the weather. He'll say, "If it's windy, we'll go to Halifax." I've been waiting forever for a trip to Halifax, but if there's really bad weather, you can't go anyway! And he'll be gone fishing at five in the morning, and back at six at night. After supper, he has to go back to the boat, and then he's tired and has to go to bed. There's no real social life, because he works Friday, Saturday, and if he has to, Sunday. People who work Monday to Friday will invite us to Saturday suppers, but we can never go because he's too tired. My aunt said, "Are you sure you want to marry a fisherman? You'll have to go to dances by yourself!" For us to go out together, it's a major feat. And at the end of the lobster season he goes fishing for flatfish, and a month later he goes gillnet fishing. And this year he's paying for a new boat, so I think it's going to be 'goodbye' on Sunday night, and he'll come home on Friday. Well, I've got other things, I've got friends. You have to be independent, and expect to be disappointed, expect to be let down. I just don't make plans anymore. Not with him.

When I asked women what they thought of as 'my community' they usually began with the county they lived in, and several made strong distinctions between the lifestyles and values of people in their county versus those of the two other counties in LFA 34. Interestingly, members of both Acadian and English communities within a county seemed to feel more affinity for each other than for members of corresponding ethnic communities in a neighbouring county. For instance, an Acadian woman from Clare in Digby County said:

I've never been to Pubnico. The impression we get is that they're full of cash. They drive great big four wheel drives. None of the women work. They wear leather coats and big diamonds. If you're a fisherman's wife from Pubnico, you're in Halifax the first week of fishing season with a blank cheque. Competitive, boy! Within their own community, trying to be better than the neighbours. Here, it's not like that.

But an Acadian woman from Yarmouth County had an equally critical view of the way she thought things were done in Clare:

I don't know much about fishing communities outside of my area. All I know is that up the [county] line toward Meteghan they treat their crew with no respect at all. They make them do everything, like mow their lawns in the summer. It's terrible! They have to be there. If they're late or something, they lose their job!

When probed, the women made finer geographic distinctions, usually identifying a very local community, not so much a political unit as an affective one, a geographically

located cluster of households whose members knew and took care of each other. Typically, they would explain that if a family within this local community was in trouble, had lost their home in a fire, or had a member with a serious illness, everyone would pitch in to help them. They would raise money for them if necessary, and pray together in church for the seriously ill. Several women mentioned their loyalty to local small businesses. They said that whenever possible they shopped at the village stores, rather than at the new shopping malls that have sprung up around Barrington, Yarmouth, and Digby.

Women described differences among the three county-level 'communities' by their values, mores, and fishing styles, but they often distinguished the boundaries of their smaller, affective communities in terms of ethnic heritage or religion. French-speaking Acadian women in particular mentioned the powerful bonds generated by a common language and history. Most women interviewed attended church regularly, and identified closely with the community of worshippers in their own church, whether Roman Catholic or Protestant:

The most important thing in our community would be our [Baptist] church. We play an active role there. Because there's a certain number of the community folk in that church, you tend to be closer to them than those who aren't. It shouldn't be that way, but that's the way it is. About half the people in our area are Roman Catholic. Yes, the church is a binding factor, but I think that if we're God-loving and God-fearing people, that we should branch out to those other people as well. But there's just a certain amount of time to do things, and you have your family life and the life of the church... The people of the community are close-knit, but then I think that goes back to the church, because the people I'm speaking of are really the folks from our church. We're like a family.

Life in a fishing household

When I asked women how they thought life differed in a fishing household, most of the responses centred around the fact that their husbands were absent from the home for long periods of time, working in an occupation known for its uncertainties and dangers. The themes of spousal separation and fear for the fisherman's safety have been addressed in many studies of the fishing household (Acheson 1981; Binkley 1995; Binkley 2003; McGoodwin 1990; Nadel-Klein and Davis 1988). One woman explained:

It's the hours, mainly, I guess. It depends on the tides, and what time he goes fishing. In the winter it can run anywhere from eight o'clock in the evening until two in the morning when he leaves. He's away eighteen to twenty hours. I used to worry a lot about it, but I've come to a place where you have to *leave* it, because it can ruin your day. If it's breezing up here, it's not *necessarily* breezing out there. You just have to put it out of your mind. And the boat he has now is a very good fishing boat. It feels very safe in it.

Acheson (1988: 48ff.) has described the strong identification lobstermen feel with their profession and the close ties they form with fellow lobster fishermen. Even when they are not out on the water, many captains prefer to spend their spare time working on vessels or gear, or just passing the time on the wharf talking to other fishermen. Most of the wives I talked to noted their husbands' passion or even obsession with fishing. As one put it, "My husband loves what he does. Everything he does really revolves around fishing."

Fishermen's preoccupation with their work and the long hours they spend away from home can put a strain on the marriage. According to one respondent,

It's not for everybody. The husband is gone a lot, and you just have to occupy your time. A lot of women can't take it. There's a lot of breakups. It's very sad, but they knew what they were getting into, it seems to me.

But most of the women I talked to acknowledged the advantages of being a lobster captain's wife as well. Living in a region with high unemployment and limited employment opportunities, they were very well off when compared with many other households in the region. They usually lived in nicer houses and could afford a new car and a winter vacation. Several mentioned that they could provide much more for their children than their parents had been able to provide for them. One woman summed up the reasons she found life in a fishing household especially rewarding:

Usually you picture a couple working nine-to-five. If children are involved, usually both parents have to work to maintain the income, so there's not a lot of time for the normal day-to-day meals and chores that you have to do. With a fisherman's work, it's wide open for him as well as for myself because when he's fishing hard, the meals and the lunches are done and he can focus totally on fishing. The wife has to take up all of the financial worries, the children, the house, whatever, to allow the fishermen to go out and not worry about those things. But at the same time, when they're not fishing you're back into a shared routine, so it's flop-flopping between the seasons. It's nice. For me - a little philosophy here - but for me, I like the changing seasons in the year, okay? Things change, and it hails a new season. Like when spring's here, and you know spring fishing is coming, your attitude changes and everything. With lobster fishermen, it's the same thing. They follow

the seasons of the year. They prepare mentally for what's coming. And physically prepare, as far as what you will need in the house. It's nice. With lobster fishermen, they don't have the monotony of nine-to-five. That enables them to handle the pressure during that burst of time when they have to do it, because when they're out in that boat with the other men, it's quite a responsibility.

The Future for Atlantic Fishing Communities⁸

Federally appointed commissions (Canada, Task Force on Atlantic Fisheries 1982; Canada, Department of Fisheries and Oceans 1990a) as well as social scientists (Apostle 1998; Binkley 1996; Davis 1991; Marshall 2001; Sinclair 1988) have expressed concerns for the future survival of Atlantic Canadian fishing communities. These communities will have to be able to provide meaningful employment opportunities as well as an attractive physical, cultural and social environment in order to retain their children in the region as the labour force of the future. During interviews with both captains and wives I asked them to consider the future prospects for their communities, given the decline of most of the fisheries, the perennial uncertainty of the lobster fishery, the high cost of entering it, and the paucity of employment opportunities outside of the fishing industry in Southwest Nova Scotia. I asked them if their children, and local children in general, would prefer to stay in their home communities after finishing school, or if they were more likely to want to leave the area. About a third of the respondents were pessimistic about the future, another third fairly optimistic, and the rest were unsure or equivocal. Optimistic or not, none of the respondents described a marked desire among young people to leave their home communities. Most said that young people preferred to stay if they could find employment. Twelve captains had sons who were finished with school, and each of these had at least one son employed in the fishing industry.

Attitudes about future prospects for the local community varied with place of residence and ethnicity. Only francophone Acadians, living (with one exception) in either Clare or

⁸ The use of the term 'fishing community' to characterize a non-industrial community where fishing takes place has provoked criticism. As Pauline Gardiner Barber (1995: 7-8) has explained, this homogenizing characterization may obscure significant differences in the individual characters of local fisheries. Furthermore, it may exaggerate the importance of the fishery in the context of other local livelihood practices. In many (but not all) of the 'fishing communities' I visited, the lobster fishery was the mainstay of the economy, but there were always a number of livelihood alternatives, and the lobster fishery was regarded in varying degrees of importance.

the Pubnicos, expressed real optimism. Two skippers from Clare were confident that the economic diversity of their community coupled with an Acadian sense of solidarity would sustain their community in the future. According to one, "It's not like there's just one big company down here. We've got all these small industries around, so there's work everywhere." The other added, "Around here, if you don't mind getting up in the morning and working, there are a lot of jobs. We take care of each other." A fisherman from the Pubnico area saw plenty of work for young people in the diversified local fishery:

Around here, it's not too bad. If you want to go fishing, you'll do all right around here. A lot of young fellows will go on a dragger or a longliner or swordfishing in the summer. If anybody wants to go fishing, there's no problem.

Only members of English-speaking communities expressed strong reservations regarding livelihood possibilities for their children if they chose to remain. The most pessimistic respondents were from the more remote island areas, Cape Sable Island and Digby Neck and Islands, where there is little economic diversity outside of the fishery. According to a fisherman from Woods Harbour,

It doesn't look good. My children are still here. Either they or their spouses work in the fishery. It's getting down to the level of grandchildren now, and they're going to have it tougher. If the lobster fishery doesn't hold up, there'll be no jobs.

A captain from Cape Sable Island was equally dismal:

A future for young people? No. Not if the fishing is gone. And it doesn't look good. I wouldn't encourage young people to get out of school and go into the fishery. I've got grandchildren, two boys. I tell them to stay in school, not to count on the fishery, but they still want to fish. I suppose it's born in them. But I don't think there will be a fishery for them. Not to make a living.

Francophones from Wedgeport, an area less economically developed than either Clare or the Pubnicos, tended to be equivocal about their community's prospects. One captain felt that the future depended on whether young people were willing to do the kind of work that was available:

It all depends on what you want to do. Lobstering is only so many months. There's rockweeding, but it's all [done by] people that are older. You don't see any young people at all because it's too much hard work. You've got to have a strong back and a weak mind to do that! The young people now don't like to work. They want the easy money. There's a future here, and there's not a future. I've got my little boy here. There's a future in fishing for him because I'm into it.

But another license holder from Wedgeport felt that young people in his area were more likely to want to stay than they had been in the past:

For the past few years, they have been staying. In my day, the majority went - maybe because their father wasn't involved in the fishery. But now it seems that they want to stay more. Some work in Yarmouth. It's cheaper to live in Wedgeport, but there isn't much work and the wages are low.

Why do young people choose to remain in a fishing community when prospects are so uncertain, and there are many more opportunities for work in urban areas? Previous studies have shown the commitment of fishing community members to their unique way of life, and their determination to survive as a community, even when the odds are against them (Apostle et al. 1998: 315-334; Giasson 1992; Matthews 1976). As to why a young man would want to enter the lobster fishery today, I offer the response of a young captain from East Pubnico, who summed up the advantages and disadvantages, joys and sorrows of a lobsterman in a way that would probably sit well with nearly any of the respondents:

This isn't a 'job'. I'm not a doctor or a lawyer. I don't close my office. I don't change my profession. It's *not* a job. I know, it sounds naïve, it sounds corny. Now, I hope my son becomes something other than a fisherman. In the back of my mind, I hope he becomes interested in something else. But in my *heart* I hope he becomes a fisherman. It's a horrible job but I don't want to do anything else! You know, I quit school, and I remember my grandfather saying to me, "Don't! Go to school, get your education, do something! You're smart, you like to read." I would have loved to get into teaching, but I couldn't see myself leaving, and another two years of school was just another two years I wasn't going to work. Everybody in my family for generations were fishermen. When we get together for Christmas that's what we talk about. And I wonder whether my son and I are going to have that kind of relationship. Are we ever going to sit down and talk about fishing spots? I know how good it makes me feel to hear these things from my grandfather, like: "It's a little rough right here." I want to hear what he has to say. It's passed down, it's things you'd never learn in school if you were in school for a million years. You'd never learn about, "This little rock, if you line up this and that, this and that...but you can't put your pots there at a certain time of year. You've got to be *there*..." Just little things like that.

Summary

Superficially, the mode of production in the Southwest Nova Scotia lobster fishery has changed very little in fifty years. It is still a small boat owner-operated fixed-gear daily fishing enterprise. It is still, in many ways, a family business. Captains are likely to employ relatives as crew, and captains' wives still play important supporting roles in the lobster operation. Changes in the labour process have occurred gradually, not suddenly, or radically, as they have in some other fisheries. Most noticeable among the changes are intensified fishing effort, and improved fishing technology. Lobster fishermen are going further out to sea, fishing throughout the winter, and spending more hours a day on the boat. They are using bigger and more powerful vessels, more advanced navigational and fish-finding electronics, and more durable wire traps.

Fifty years ago, the typical lobster boat was manned by the skipper and his stern man. Today there are usually two crew members in addition to the captain, and during busy times there may be as many as four. The work is hard and dangerous, but today's lobster crews are well paid. The majority are still paid in a share of the catch as they were in the past, though less senior crew members and part-timers may be paid on a daily or weekly basis. The most senior crew member is likely to be a relative of the captain. Though crew members are well paid, they cannot expect career advancement to the position of captain. The cost of a license, vessel, and gear will remain out of the reach of most, and because licenses are limited and crew size has grown, there are simply not enough lobster licenses to go around. While the inflated price of entry has excluded many qualified fishermen from becoming captains, it has allowed other parties with the necessary funds to accumulate multiple lobster licenses. These parties include lobster buyers and wealthy fishermen. This practice defeats the principles of an owner-operator fishery and worries many fishermen, but there does not seem to be a legal way to prevent it.

While the lobster harvest has increased dramatically in volume and value, other fisheries in the region have either declined or become inaccessible to small-time owner-operators because of limited entry and the ITQ system. For this reason, the majority of lobster license holders have become lobster specialists rather than multi-species fishermen, as

most lobstermen were fifty years ago. Because the six-month lobster season must now provide a year's income, lobster specialists are inclined to intensify their fishing efforts and invest heavily in vessels and gear. The more aggressive fishermen have adopted the trawl system, a more productive and mobile way of catching lobster. There are growing tensions between trawl fishermen and the 'traditional' buoy gear fishermen over tangled lines, and over the intrusion of trawlers into traditional inshore buoy gear territories in the spring.

Fifty years ago, an informal system of justice prevailed in the distribution of access to the lobster resource in Southwest Nova Scotia. Lobster fishermen operating out of the same harbour were able to claim an exclusive fishing territory for their community, and to defend it from use by fishermen from other communities. Fishermen within the community could also lay claim to personal fishing spaces within the community territory. This informal system of distributive justice has broken down in recent years for several reasons. First, the value of lobster has encouraged more aggressive fishing practices. Second, vessels are faster and more seaworthy, making it easier to move in and out of distant fishing territories. Third, the areas being fished today have expanded far beyond traditional community territories, and lobsters are more plentiful. In the view of some fishermen, there are so many places to fish, and so many lobsters to be caught, that there is no need for territorial restrictions. In the past, there was little government surveillance of the lobster fishery and fewer fishing regulations, so fishermen solved disputes through an appeal to custom and through informal sanctions and occasional violence. Today, fishermen are more likely to turn to federal laws and enforcement officers, or to the LFA Advisory Committee, to settle conflicts.

There have been both changes and continuities in lobster fishing households over the years. All but one of the fishing captains I spoke with was married, and their wives continued to contribute to the fishing enterprise in many important ways, as did wives in former times. However, fishermen's wives appear on the whole to shoulder fewer responsibilities for the physical maintenance of the vessel and gear, and to take a smaller part in the clerical work than they used to. The women I talked to spanned a wide range

of participation in the fishing enterprise, from full-fledged crew member to almost no involvement. Some women supplemented their husbands' fishing incomes – and sometimes subsidized the fishing enterprise – with incomes from professional careers of their own. As Binkley (1995) has pointed out, fishing households face many risks and dangers, but they also enjoy some rewards. The lobster enterprise involves both financial and physical risks. During the winter fishing season, captains are absent at sea for much of the time, and their wives and families must not only worry for their safety, but take on many of the traditionally 'male' tasks in the household division of labour. However, most of the captain's wives I talked with appreciated the relatively high standard of living that members of most lobster fishing households enjoy.

Chapter 8

CONCLUSION

This study has traced the development of the commercial lobster industry in Southwest Nova Scotia. The research has focused on the more recent transformation of the industry from a 'poor man's fishery' open to all, to a well capitalized and highly profitable fishing sector open to a limited number of people. Unlike many fishermen in Atlantic Canada, the lobster fishermen of Southwest Nova Scotia have not been compelled to reconfigure their livelihood strategies by the occasion of a stock collapse. They have not been the targets of major federal policy innovations such as the promotion of the Fordist model of industrialization in the groundfish fishery, or the individual transferable quota (ITQ). The changing structure of the lobster industry can be attributed as much to the entrepreneurial responses of its participants to new opportunities as to the exogenous dictates of the state, the market, or the resource base itself. In the preceding chapters I have discussed these responses in terms of justice, authority, globalization, and the labour process.

The State, Justice, and Issues of Common Property

The Canadian lobster ceased to be a 'common property' resource when the state began regulating its exploitation in 1873. The Canadian government, through its Department of Fisheries and Oceans, has increasingly asserted its authority to regulate the nation's fisheries since the 1970s, largely in response to a series of crises in the groundfish stocks. The Oceans Act of 1996 prioritized stock conservation over social and economic considerations as a basis for management and regulatory policy. Lobster license holders in LFA 34 have rewarded this policy turn toward the 'conservation paradigm' with an unprecedented level of support. Lobster fishing captains support the regulatory activities of the DFO because they believe that by protecting the resource, the DFO is protecting their livelihoods. The DFO has secured their support primarily by stricter enforcement of regulations against unlicensed fishing and fishing out of season. Transgressors of these particular regulations are unlicensed fishermen and, often, aboriginal Canadians claiming a treaty right to access. Licensed fishermen claim to support this new enforcement effort

for reasons of resource conservation, but the arrest and prosecution of unlicensed fishermen also preserves their monopoly of access.

The DFO has also won support from license holders by paying more attention to their concerns. By convening Lobster Fishing Area Advisory Committees, Regional Advisory Process (RAP) meetings, and Conservation Harvesting Plan workshops, the DFO has provided fora where fisheries managers, scientists, and enforcement officers can hear and respond to what fishermen have to say. Because LFA 34 license holders have not developed an independent organization to represent them, DFO Advisory Committee meetings are the only regular, duly constituted assemblies of elected representatives from across LFA 34. Here, the DFO is arguably in a privileged position of oversight, but most fishermen interviewed preferred the relative neutrality they believe a DFO-sponsored meeting provides.

The Canadian state has had *de jure* authority to regulate the lobster fishery from the British North America Act of 1867, but it has secured and extended its *de facto* authority in this area while passing through a full circle of management paradigms. The state first asserted its authority more than a century ago under the conservation paradigm, restricting access through seasonal and size regulations, and later by an open licensing system. Under the rationalization paradigm adopted after the Second World War, limited entry licensing was introduced. With limited entry licensing, the state, under the social/community paradigm promoted by Roméo LeBlanc, could restrict its appeal for cooperation to the privileged few holding lobster licenses. By establishing a core group with legal access to the resource, the state was able to develop a rapport with 'legitimate' lobster fishermen while excluding the participation of others. Finally, with the Oceans Act of 1996, the state returned to the conservation paradigm as a basis for management. At this point, the consequences of inadequate conservation measures had been demonstrated by the collapse of the northern cod stocks. There was also concern over the effects of a developing aboriginal lobster fishery. The majority of lobster license holders had by now invested heavily in the lobster fishery. If that fishery were to collapse, there were now fewer livelihood alternatives. As the only visible protector of the resource, the

state, with its newly demonstrated willingness to listen to the concerns of license holders, has established an unprecedented level of authority in the lobster fishery in recent years.

The limited entry system is modeled on a utilitarian conception of distributive justice designed to provide an acceptable standard of living for a relatively small group of fishermen, rather than an unacceptably low standard of living for a larger group. As such, the limited entry system does not address questions of fairness of distribution raised by fishermen denied access to the resource. Instead, state involvement in discourse on fairness is limited to issues of procedural justice raised in state sponsored fora by licensed fishermen, fishermen whose right to access is already guaranteed.

The persistence of 'local justice'

While lobster license holders acknowledge the DFO's authority to regulate the fishery, enforcement of regulations pertaining to licensed lobster fishermen is highly dependent on industry cooperation and assistance. DFO Enforcement does not have sufficient vessels or manpower for effective surveillance of the licensed lobster fleet in LFA 34. Almost all enforcement actions against licensed fishermen are taken as the result of information provided by other licensed fishermen. In order to retain the cooperation of fishermen, DFO officials at the local level must develop reputations for reasonability, fairness and sympathy for the fishermen. In LFA 34, local DFO officials are typically from the region, with family connections to the fishery. For this reason they are generally sympathetic, but they are also 'streetwise' to the particularities of the local industry, giving them more credence among fishermen. In practice, they have discretion to mediate between the letter of policy created at a higher departmental level, and the spirit of that policy delivered at the ground level. Informed of the pitfalls of unilateral intervention by the 'Pubnico Affair', local DFO officials seek the cooperation and approval of members of the Advisory Committee before embarking on enforcement campaigns.

While the DFO has assumed more authority in regulating the lobster fishery, local sanctions still play an important part in this process. With the extension of fishing grounds into the midshore and the greater mobility of vessels, claims of rights to personal

or community-based fishing grounds are harder to maintain, but they are still made in many cases. Fishermen will still tamper with and occasionally destroy gear placed 'inappropriately', and, except in extreme cases, these practices are tacitly permitted by the DFO. In order to fish out of community harbours, even licensed fishermen must seek approval of other local fishermen, or face harassment. In some cases, local harbour authorities may limit the number of vessels allowed to fish from the wharf. And while a certain level of illegal fishing activity may be tolerated within a given community, gross transgression of local norms by any fisherman, licensed or not, will prompt others to inform on him to the DFO.

The issue of common property

Many fishermen, particularly those with sons or other relatives unable to enter the fishery, have concerns about the fairness of limited entry, but very few deny its necessity. They are convinced by good historical evidence that the lobster fishery can only support - and be properly conserved - by a limited number of participants. Fishermen interviewed nevertheless acknowledged the lobster resource as a public property and were generally grateful to have the privilege of access to it. They expressed commitment to sharing their good fortune as much as possible with the local community by making purchases locally, and employing local people in their lobster businesses. In the case of the aboriginal fishery, most fishermen accepted the Supreme Court ruling that First Nations have a treaty right to participate in the fishery. Their expressed concern was for the effect this would have on resource conservation. Embedded in this concern is the implicit assumption that the federal government has the authority to delegate access, since lobster is a publicly owned resource.

The Bases of Regulatory Authority, and the Production of Knowledge to Inform Regulatory Policy

The basis of federal authority to regulate the fisheries is legal, from the British North America Act. The Oceans Act of 1996 specifies resource conservation as the guiding principle for DFO management. The second order of DFO responsibility, clarified by the Sparrow and Marshall decisions of the Supreme Court of Canada, is to fulfill treaty

obligations with aboriginal Canadians involving the right to fish. The DFO has no legal responsibility, or legal authority, to take social considerations into account when regulating the fisheries¹. The DFO legitimates its authority to manage and regulate the fisheries based on its monopoly on the production of 'acceptable' scientific knowledge for the Canadian fisheries. However, to further legitimate its authority and to assure compliance with regulations, the DFO frequently consults with licensed fishermen on the fairness and appropriateness of proposed regulations and enforcement campaigns. Canadian fisheries policy is based on a utilitarian model, but in order to execute policy the DFO has, through the consultation process, entered into an informal social contract with licensed lobster fishermen. This social contract does not, however, include many individuals with a legitimate interest in the lobster fishery, particularly crew members, off-reserve aboriginal people, and other community members with an interest in gaining access to, or protecting, the resource.

Restriction of the range of discourse

By specifying stock conservation as the primary responsibility of the DFO, the state effectively restricts the range of discourse and the resultant production of scientific knowledge to matters pertaining to conservation. Integration of aboriginal Canadians into the fishery is a secondary responsibility. By law, the process must not impinge on established conservation principles. By recognizing only licensed fishermen² in the social contract - or more concretely, as voting members at LFA Advisory Committee meetings - the DFO effectively controls who will participate in the discussion.

In the Conservation Framework for Atlantic Lobster, the Fisheries Resource Conservation Council (FRCC) sets the terms of reference under which conservation is to be discussed. The conservation strategy presented in the Framework requires specification of concrete goals to be measured in quantitative terms. Rather than being

¹ It does take geographical considerations into account. Under the 'adjacency principle', members of fishing communities closest to a fish stock usually receive primary consideration in questions of allocation.

² The DFO also recognizes individual First Nations bands corporately in annual agreements made under the Aboriginal Fisheries Strategy (AFS). In the case of the commercial lobster fishery, bands have been issued standard limited entry lobster licenses purchased from retiring fishermen. In this sense they may be counted as 'licensed fishermen'.

purely precautionary, regulations must be designed to achieve predetermined targets. The Framework invites the participation of licensed lobster fishermen in designing regulations and conservation plans to achieve these targets, but the targets themselves, and the ways that success will be measured, are developed by DFO scientists, subject to the approval of the Fisheries Minister. In this way, the Framework also sets the language to be used in discourse, and it is a 'normal'³ scientific language (Kuhn 1970).

Licensed lobster fishermen challenge the legitimacy of state authority, as predicated on the DFO's monopoly of the production of 'acceptable' fisheries scientific knowledge, in three ways. First, they argue that government scientists are obliged to conduct research directed toward accomplishing predetermined political goals, thereby creating knowledge specifically to serve the interests of the state. Second, they argue that scientists are insufficiently funded to properly research lobster population dynamics, and therefore rely on questionable population modeling when making stock assessments. Finally, fishermen object to the process of 'normal' science itself, with its self-imposed limits on the range of scientific discourse, its preoccupation with methodological rigour, and the kind of knowledge it produces. They argue that normal science was unable to accurately predict the extent of the groundfish crisis, and that it is still unable to explain the robustness of the lobster stocks in Southwest Nova Scotia. Fishermen insist that their own traditional ecological knowledge, accumulated from generations of experience on the water, must be somehow incorporated into the knowledge base.

Licensed fishermen do participate in developing conservation plans, through the Advisory Committee and the Regional Advisory Process (RAP). In recent years, LFA 34 license holders have participated in workshops to produce Conservation Harvesting Plans, giving them the opportunity to put forward alternative plans for achieving conservation targets, though they have sometimes been disappointed by lukewarm government responses to these plans. In principle, the DFO has acknowledged the need to

³ According to Kuhn (1970: 10), "...'normal science' means research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice."

incorporate 'local knowledge' into the fisheries knowledge base and the stock assessment process, and it has initiated several pilot projects toward this end in the lobster fishery. By restricting discussion of the lobster fishery to conservation issues, and by restricting non-governmental participants in the discussion to license holders, the DFO is able to avoid confronting important social and economic issues connected with the lobster fishery. With the regional decline of employment in other fisheries and in the fish processing sector, the flourishing lobster fishery could conceivably provide direct employment for many more people if additional licenses were issued. As it stands, entry into the fishery is prohibitively expensive for most young fishermen. Further, fish companies and cartels of successful fishermen are accumulating multiple licenses as a capital investment, outside the spirit, if not the letter, of the law. Discussions of conservation do not address the fact that a large proportion of the catch is made in the first few days of the season. This causes a glut on the market and increased lobster mortality, and results in a less than optimal realization of the value of the catch. In effect, by limiting discussion of the lobster fishery to topics concerned with conservation, the state leaves the resolution of important social and economic issues to the marketplace.

Global Transformations and Local Responses

The process of globalization can be described very simply as the relaxation of geographical constraints on relationships in the economic, political, social, and cultural spheres (Waters 2001:5). In the economic sphere, these relationships can be conceived as forward and backward linkages on the chain of production and distribution (Sinclair 1985: 117-8). A forward linkage moves toward the final product. A backward linkage moves in the opposite direction. If the lobster fishing enterprise is taken as the point of reference on this chain, backward linkages are toward the supplies and services required for fishing, and forward linkages are toward the point of final consumption of the product. Until recently, backward linkages in the lobster fishery rarely extended beyond the local fishing community. Fishermen built their own vessels and gear, or purchased them from local artisans. Now, backward linkages are international. For instance, fishermen may purchase Japanese navigational equipment and Swedish diesel engines to install in vessels made of American fiberglass. In terms of forward linkages, lobster

captains were previously bound by geographical constraints to sell their catches to a local buyer. Improved transportation, communications and storage technology now allow them to deal with more distant buyers. By pooling their catches with other fishermen, more enterprising captains may act as buyers themselves, dealing directly with higher-level lobster brokers to obtain a better price. Lobster buyers have also taken advantage of global 'time - space compression' (Harvey 1989: 201 ff.). Air transportation and long-term storage systems have extended their markets spatially and temporally. Buyers have forged new and innovative marketing relationships using modern communications technology. Emerging market niches have also encouraged new entrants into the lobster-buying sector.

In the political sphere, globalization has forced states to look outward as well as inward. The principles of social justice that inform the policies of a social democratic state assume a discrete and manageable national economy (Gray 1998: 89). Globalization is characterized by transnational flows of capital and commodities, and by international divisions of labour that defy state regulation. Isolationism is not an option if the state intends to provide its constituents with acceptable material standards of living in comparison with international norms. By protecting national industries with trade barriers or subsidies, the state risks retaliatory actions from its trading partners. The cost of supporting the national workforce - and those outside of the workforce - with fair labour standards, social welfare programs, and regional development schemes, must be borne by commodity producing workers and business investors through income and business taxes. These added costs tend to make domestic commodities non-competitive in the global marketplace, threatening the balance of trade. States have responded to these challenges by retreating from policies conceived to promote social justice and regional development, and by attempting to consign issues of distribution to global market forces (Apostle et al. 1998: 9). In the case of the lobster fishery, the Canadian government has distanced itself from the responsibility for sustaining individual fishing communities and preserving employment opportunities, and focused instead on preserving the source of wealth (and export revenues): the lobster stocks themselves.

In the social sphere, residents of lobster fishing communities find they need no longer rely solely on relationships formed within the community. In the past, social relationships within the community involving reciprocity were essential for survival, economic and otherwise, since little assistance or support could be expected from the outside world. Improved communications and transportation allow residents to look far outside of the community and indeed, internationally, for friendship and emotional support, for ideas and entertainment, and for livelihood alternatives. In the cultural sphere they are exposed to international alternatives through cable and satellite television, movie videos and the internet, and consume a wide range of readily-available imported commodities, from Chinese athletic shoes to Japanese sport utility vehicles.

Responses to global transformations

Of necessity, both lobster buyers and lobster fishermen have become integrated into the globalization process through new backward and forward linkages. In many cases they have also responded creatively to the new global order by reorganizing their means of production and exchange to exploit nascent forms of market relationships, using emerging technologies and modes of communication. In the case of live lobster dealers, Clearwater Lobsters has led the way in this response, and is often credited with breaking the New England monopoly on lobster trade in the process. Clearwater has overcome the seasonal constraints of the fishery with its long-term storage facilities, delivering high-quality product year-round. With sales offices in central Canada, the eastern and western United States, the United Kingdom, Belgium, China, Taiwan, and Argentina, and a transshipment plant in Lexington, Kentucky, Clearwater is highly visible and responsive to new clients. The Clearwater web site permits customers to place retail and wholesale orders conveniently, for immediate delivery. While Clearwater has been the Canadian leader in marketing, storage and shipping innovations, several other Nova Scotia lobster brokers have successfully followed its example on a smaller scale. Though most lobster buyers in Southwest Nova Scotia are 'contract buyers' purchasing lobsters primarily to supply the larger brokers, faxes and the internet keep them closely informed of international price trends, and of small spot demands for lobster that they can fill directly.

Like the lobster buyers, many fishermen keep themselves aware of market trends on a daily basis through fax services and the internet. Many have lobster cars or even tank houses where they can hold lobsters for a week or more, if they anticipate a price increase. While there are only a few open, community-based fishermen's cooperatives in Southwest Nova Scotia, there has been a proliferation of smaller, closed, and usually kin-based, cooperative groups. Groups of fishermen may operate as dealers with a shared buyer's license, using common storage facilities. Improved communications and transportation systems allow fishermen - especially if they are organized in groups with substantial volume to offer - to bypass local lobster buyers and deal directly with larger brokers to obtain a higher price. Fishermen also take advantage of the global marketplace for gear and fishing supplies, where they once had to settle for the products and prices offered by local merchants. The pervasiveness of globalization extends to the most unexpected areas, as illustrated by the recent popularity of imported North African alfonsino 'frames'⁴ for use as lobster bait.

The problem of disembeddedness

While globalization has given lobster buyers and lobster license holders a new range of opportunities and choices, these opportunities usually involve forming relationships with individuals and businesses outside of the local fishing community, and often outside of the region. This has contributed to the 'disembedding' of communities, "...a process through which the economic activities, rational and social relationships are 'lifted' from local contexts of interaction" (Apostle et al. 1998: 326). The relative isolation of fishing communities in the past demanded the formation of strong local social relationships and institutions to sort out questions of distribution of local natural and labour resources. The success of an individual's enterprise was dictated to a large extent by the strength and efficiency of these relationships, and the degree to which the individual's enterprise was incorporated into them. Fishermen depended upon limited local resources for their vessels and gear, and upon one or two local merchants for their market. Especially before

⁴ The alfonsino is a large-headed oily fish resembling the local ocean perch or redfish, whose frames are also used for bait. While alfonsino frames are more expensive because they are imported from Africa, they hold up much longer than redfish frames in a lobster trap.

the institution of limited entry, they depended on local good will even to share access to the fishing grounds. Interdependence produced local solidarity and local norms of conduct. The limits of local resources - under the influence of local norms - set the bounds for acceptable consumption patterns.

While the fishermen interviewed still professed loyalty to their communities, and would usually try to make purchases and sell their catch locally whenever possible, this is now a matter of choice rather than absolute necessity. And local lobster buyers and suppliers must still compete in an international market, providing comparable goods and services. Local buyers do not feel as obliged to buy lobsters from local fishermen. Local merchants will not purchase locally produced goods and services if they are too expensive, or of inferior quality. At the same time, fishermen's consumption patterns are influenced by global standards transmitted through the media and made possible by higher incomes. Thus, expression through consumption has also become disembedded from the local context.

Although globalization has awakened the desire for consumption of international luxury commodities among most residents of lobster fishing communities, it has provided only some of them with the means to purchase these commodities, most notably the holders of licenses to fish or buy lobster. Unlicensed individuals, with only their labour to sell, often find themselves making less money because they are in competition with an international labour force. Individuals fortunate enough to find jobs as lobster boat crew members may earn a good living for now, but most cannot expect to become captains themselves in the future. While there has always been a division of labour in lobster fishing communities, the more highly differentiated rewards of the globalization process have increased social stratification. With increased stratification, more conflicts over fairness of distribution arise, but now these conflicts are more likely to be 'resolved' by global market forces than by the intervention of local institutions or custom.

Labour Process, Class Differentiation and Concentration of Capital

The typical lobster fishing enterprise in Southwest Nova Scotia has moved away from the

artisanal household commodity production model toward the capitalist small business model. This has been occasioned by the implementation of limited entry licensing, the subsequent increase in capitalization of individual fishing enterprises, and the dramatic increase in catch volume and value in recent years. Limited entry access to an increasingly valuable resource has given each licensed fishing enterprise an intrinsic capital value. To maximize return on this initial capital, most licensed fishermen have invested, usually through debt financing, in improved and more sophisticated capital equipment. The management and accounting for greatly increased investments and cash flows, coupled with the increased reporting requirements on payroll and catch data required by the state, has reshaped the lobster fishing business. Many fishermen have formed their own corporations, and most rely on accountants and other professional financial and legal advisors.

The labour force

The labour force on a typical LFA 34 lobster vessel consists of a captain and two crew members. The captain may hire an additional hand during the peak landing periods in December and late spring. Permanent crew members are usually paid in shares of the catch rather than in wages, making them legal co-adventurers with the captain, rather than employees. Temporary workers, and some permanent crew members, are paid in wages. In the majority of cases, at least one permanent crew member will be a family relation of the captain. The captain's wife is also likely to participate in the enterprise in some way, and may or may not be paid for her labour contribution.

As lobster enterprises shift from the household commodity production model to the small business model, class differentiation is also taking place. Where 'captain' and 'crew member' once described two points on a single career path, these terms are now more likely to describe two different careers. Since licenses are limited, and the average crew on an LFA 34 vessel now consists of two individuals rather than one, there are only enough licenses to permit the eventual promotion of one crew member to 'captain'. The price of entry is high, and crew members who aspire to purchase their own 'rig' also find themselves in a bidding competition with lobster buyers and successful captains who

wish to own multiple licenses. In the past, when catches and catch values were lower, crew members were not as well-compensated for their labour, but they could reasonably contemplate becoming captains themselves at some time in the future. Vessels were smaller and catches were lower in LFA 34, so there was usually only one crew member on a boat. That person, often a son or relative, was likely to assume the license when the captain retired. In the meantime, navigational and fish-finding equipment were rudimentary, so lobstermen relied on an intimate knowledge of a limited fishing ground that could only be learned in a long apprenticeship as a crew member fishing on that particular ground.

Now, with more than one crew member on a vessel, at least one of them might hope to eventually assume the license, especially if he is a close relative of the captain. This is not as likely to happen as it was in the past because licenses have appreciated so much in value. A captain transferring a license, even if it is to his son, must pay capital gains taxes on the appreciated value of the license, even if he simply gives the license to his son with no monetary exchange. In many cases, especially if the lobster operation is heavily mortgaged, the only practical solution for a retiring captain is to sell his enterprise to an outside buyer. For this reason, some captains continue to fish beyond their preferred age of retirement in order to preserve a livelihood for their crews.

With the introduction of better vessels and more sophisticated electronic gear, and with the increasing abundance and spatial distribution of lobsters, less fishing and navigational skill is required of captains and crew. Since many lobstermen, particularly midshore fishers, are extremely mobile, they do not rely as much on intimate knowledge of a single fishing ground. In this sense, the occupations of both captain and crew have been 'deskilled'. This is not to say that there is not a lot of skill involved in lobster fishing. It is more that the new skills required, using electronic equipment for instance, are more technical and generalized, rather than specific to a certain lobster ground, or even to the lobster fishery. The skills required of captains and crew today can be gained with less time on the water and they transfer more easily to different fishing areas and sectors. This means that younger, less experienced fishermen can successfully skipper a vessel if they

can find the financial backing to obtain a license. It also means that experienced crew members are more easily replaceable.

Important tasks supportive of the fishing enterprise which were once performed by captains, crew members, and members of the fishing household are now likely to be contracted out to professionals. These tasks include construction and maintenance of vessels and gear and procurement of bait. Because of new and expanding clerical, financial and legal obligations, fishermen will also seek professional help from accountants, bankers and lawyers. While many fishermen's wives continue to play an important part in the fishing enterprise, their perceived status in the enterprise is sometimes reduced by the professionalization of many support tasks. For instance, where wives often did all the bookkeeping in the past, they are now more likely to keep daily journals to present to a professional accountant. Where wives once knitted trap heads and bait bags, these items are now usually cut from manufactured netting, so minimal time and skill is required to assemble them. In some cases, fishermen's wives now provide critical support for the fishing enterprise by holding full-time jobs in other professions, thereby carrying the household through the economic uncertainties and seasonality that characterize the lobster fishery.

Fordism and flexibility

The lobster industry of Southwest Nova Scotia did not pass through the Fordist phase of industrialization that characterized other fisheries in the region, a phase that was nurtured by a government policy of rationalization after the Second World War (Apostle et al. 1998: 270). With the minor exception of the offshore fleet, lobstering has remained an owner-operated small boat fishery. Most full-time crew members continue to work as 'co-adventurers' rather than as salaried employees. There is little processing of lobster in the area, so very few plant workers are employed. Instead, the modern lobster industry in Southwest Nova Scotia embodies the characteristics of what Harvey calls a system of 'flexible accumulation' (Harvey 1989: 141-172). Production is decentralized, and many financial risks are taken at the bottom, by fishing captains and small-scale lobster buyers. The competitive and dispersed market puts a premium on entrepreneurial ability and

swift, informed decision-making at all levels. Fishermen, wharf buyers, and large brokers all use modern communications systems to keep in constant touch with changing market conditions. Technologies for capture, storage and shipping of lobsters are evolving rapidly. Lobster is not a staple commodity: consumption of the product itself is symbolic of a privileged life style, and so demand varies with economic conditions and fashion trends. Crew members on lobster fishing vessels fit David Harvey's description of a flexible labour force (Harvey 1989: 150). Their alternative options for employment in other fisheries have been reduced in recent years. Their employment on lobster vessels is flexible and seasonal to accommodate the fishing season. It is not a secure career, due to the unpredictability of the fishery. Crew members do not enjoy fringe benefits, such as retirement plans or health insurance or even provincial Workers Compensation, and they are not represented by a union.

The Continuing Agency of Fishermen in the Distribution of Access to the Resource

The limited entry policy has limited access to the lobster resource in LFA 34 to less than a thousand captains and their crews. Licenses are expensive, and may be sold to the highest bidder with minimal fishing experience required. It is nevertheless quite rare for an LFA 34 lobster license to pass into the hands of someone from outside of the region, or to be held by someone with no prior family connections to the lobster fishery. A lobster fisherman's success in LFA 34 often depends on the quality of his social ties in the community. Entry into the fishery invariably requires some kind of 'backing'. Whether it is from relatives, a fish plant or other sources, backing such a risky enterprise usually requires a trust and sympathetic interest in the potential captain that goes beyond his financial statement. In most cases, retiring captains will make a sincere effort to pass their license to a son or other relative, even at some financial cost. Larger families will pool their resources to obtain a license for a younger member. The limited entry system does not, however, make access possible for many crew members lacking the essential social ties in the community.

While LFA 34 licenses are transferable across Southwest Nova Scotia, local fishermen in each port still exert an influence over who will fish from their wharves. In many cases,

there are only enough mooring spaces for a fixed number of vessels. Local fishermen control may the use of these spaces, sometimes through the local Harbour Commission. Interlopers on locally claimed fishing grounds may still be sanctioned, sometimes by verbal forms of harassment, sometimes by destruction of gear. Fishermen may also boycott a lobster buyer seen to be dealing with an unacceptable fisherman. Local crew members will find it uncomfortable to work for such an individual.

Local fishermen's control of the resource can be breached in some cases. Lobster buyers who own wharves can purchase licenses and send fishermen to the midshore fishing grounds with little fear of reprisal. Buyers and other backers can control where lobsters are sold, and set the price for them. Still, it is safe to say that access to the fishery remains largely in the hands of community members, though it is not evenly distributed among them.

The Future of Lobster Fishery Management and some Unresolved Issues in Resource Assessment and Allocation Procedures

In July of 2002, the Department of Fisheries and Oceans released **Canada's Ocean Strategy** (Canada. Department of Fisheries and Oceans 2002). This new policy paper was the product of five years of research and consultation. It was the Department's response to a directive from the Oceans Act of 1996 to produce an integrated management strategy for Canada's ocean resources. 'Integrated management' is the guiding principle for ocean management outlined in Chapter 17 ('Protection of the Oceans') of Agenda 21 ('Programme of Action for Sustainable Development') in the United Nations' 'Rio Declaration on Environment and Development' (United Nations Conference on Environment and Development 1993: 147). **Canada's Ocean Strategy** represents an effort to harmonize Canadian oceans management policy with the internationally negotiated principles of the Rio Declaration.

Integrated oceans management takes a holistic and multidimensional approach. This is in contrast with existing oceans management policies in Canada, which focus on specific economic sectors (the fisheries, shipping, offshore oil, tourism), and on individual fish

stocks. As defined in the Rio Declaration, integrated oceans management also involves incorporating the concerns of resource users and other interested parties at the international, national, regional and local levels; and incorporating an ecosystem perspective, along with locality-based traditional ecological knowledge, into 'normal' fisheries science. If the Department of Fisheries and Oceans hopes to implement a genuinely integrated oceans management regime, it will have to expand its capacity to respond to issues originating in three general areas: the fishing sector; the coastal community; and the marine ecosystem itself.

Sectoral issues

Participants in the LFA 34 lobster fishery are represented to federal managers and policy makers almost exclusively through the LFA 34 Advisory Committee, and this system presents fundamental problems. The Advisory Committee was created by the DFO, and continues to be sponsored by it. The DFO convenes meetings and takes the notes that are distributed to license holders; and DFO officials are always present. For these reasons, many fishermen consider the Committee to be a convenience for the government, rather than a legitimate forum for the discussion and resolution of sectoral issues among fishermen. While all license holders are obliged to vote for a 'port cluster' representative, formal meetings between port cluster representatives and their constituencies are a rarity. Contacts with representatives are usually limited to occasional discussions on the wharf, and opportunities for consensus building at the port cluster level are rare. Furthermore, more than two-thirds of the fishery's participants - the crew members - are excluded from representation on the Advisory Committee altogether. In order to properly implement the principle of integrated oceans management, the DFO will have to seek new ways of discovering and responding to the concerns of both reticent license holders and unrepresented crew members. The most readily available solution to the problem would be representation of captains and crew through the Maritime Fishermen's Union (MFU), but, outside of the Clare Municipality, few lobster fishermen in LFA 34 have demonstrated an inclination toward union membership. Likewise, the federally subsidized Eastern Fishermen's Federation (EFF) has attracted little interest in the region.

Beyond issues of representation, there are several management issues raised by lobster fishermen that require resolution. The first is the escalating price of entry into the fishery. With the price of a lobster rig hovering around a million dollars, few crew members can seriously contemplate becoming captains. Those who succeed are likely to face crippling debt service expenses. There is no simple solution to this problem, because current license holders count on this windfall as their 'retirement fund'. However, it contributes to a second problem of multiple license holding by established captains, and covert accumulation of licenses by lobster buyers. These practices defeat the concept of an 'owner-operator' fishery, with widely distributed access to the resource and a clear separation of the capture and processing sectors. Most lobster fishermen believe that this system, virtually unique to the lobster fishery, has preserved that fishery, while other fisheries have failed due to overfishing by corporate fleets. In any case, by controlling multiple licenses, lobster buyers are capable of manipulating the wharf price for lobsters. Furthermore, since representatives on the Advisory Committee are elected on the basis of one vote per license, fishermen fear that groups of multiple license-holding buyers may become capable of manipulating the advisory process.

A third issue cited by lobster captains is the need to devolve some responsibility for lobster management decision-making to fishermen's representatives on the Advisory Committee, which might then appropriately be renamed the 'LFA 34 Management Committee'. Captains would like their representatives to have the authority to design conservation harvesting plans to meet DFO targets, without the threat of a Ministerial veto. An empowered Management Committee might also be better qualified to sort out pressing issues internal to LFA 34, such as gear conflicts between trawl and buoy gear fishermen.

Community issues

Integrated oceans management prescribes consultation on policy with coastal communities. This presents a difficulty, since few of Southwest Nova Scotia's hundreds of small coastal villages have the necessary institutional structures (such as village councils) to permit meaningful consultation. However, residents of these villages identify

strongly with their respective 'settlement areas', and each of the seven settlement areas in Southwest Nova Scotia appears to have the institutional structure necessary to allow for consultation. Digby, Clare, Yarmouth and Barrington are incorporated as municipalities. The Wedgeport-Ste. Anne de Ruisseau, Argyle, and Pubnico areas in the Argyle Municipality already represent themselves through existing local civic organizations. But while the settlement areas have the capacity to represent themselves as 'communities' in a general way, they do not possess the institutional structures needed to participate proactively in integrated oceans management, though some settlement areas are moving in that direction. In the Digby and Clare municipalities, for instance, the Fundy Fixed Gear Council, in cooperation with the DFO, has initiated a system of 'community-based co-management' of local groundfish stocks. While licensed fishermen take the lead role in the Council, participation by other community members is invited. At present, the Council's authority is limited to the distribution of a community groundfish quota assigned by the DFO, but the Council hopes eventually to build a bank of knowledge on the local marine ecosystem that will permit it to participate more actively in the resource management process. Toward this end, the Council, in conjunction with the Western Valley Development Authority, established the Bay of Fundy Marine Resource Centre at Cornwallis Park in 1997. The accomplishments of the Fundy Fixed Gear Council suggest a direction that Southwest Nova Scotian coastal communities, defined at the 'settlement area' level, might take to participate in the integrated management process. But these projects are still at the developmental stage. They have not yet attracted widespread participation, or even recognition, from community members outside of the fishing sector, and comparable initiatives have not been taken in Southwest Nova Scotia's other settlement areas.

Ecosystem issues

Much scientific work remains to be done before the Department of Fisheries and Oceans can take a genuine ecosystems approach toward integrated oceans management in Southwest Nova Scotia. In the case of Southwest Nova Scotia lobster, very little is known about population dynamics, and even less about the interaction of lobsters with other species in the marine environment. Since lobster fishermen began voluntarily submitting

catch logbooks in 1999, DFO scientists have more available data on the seasonal location and density of lobster populations, but processing these data has been problematic. The Thistle Marine Electronic Logbook for Lobsters may provide the solution to this problem. This device, developed in Maine, allows fishermen to electronically submit catch data directly from the fishing vessel to a DFO databank on a daily basis. The DFO purchased fifteen of these devices to install on LFA 34 lobster vessels in 2001, and there are plans to purchase additional units.

However, DFO scientists cannot rely on 'fisheries dependent' data to develop a comprehensive bank of knowledge on population dynamics and ecosystem interactions, particularly when the fishery is closed during the important mating, molting and migration periods that occur in the summer. Annual, systematic field research, including dive surveys, is urgently needed to accumulate time-series data on the movements and habits of lobsters. This kind of systematic, fisheries-independent research has been carried out on lobsters in the Bay of Fundy, and, to some extent, in LFA 33, no doubt because these lobster fishing areas host major DFO marine research stations (the St. Andrews Biological Station and the Bedford Institute of Oceanography). Southwest Nova Scotia, the province's most productive fishing region, boasting the world's richest lobster grounds, has no fisheries research facility, and this is an unacceptable oversight.

While 'normal' Canadian fisheries science has usually focused on individual species and stocks, fishermen, and especially 'generalist' small boat fishermen, have traditionally viewed commercial species in the context of the local ecosystem. In the course of fishing, they notice the subtle influences of weather and temperature, and they learn to associate the presence of one marine species with another. They recognize ecosystemic trends: for instance, as the supply of groundfish goes down, the supply of lobster goes up; or, as populations of sea urchins increase, populations of sea plants decrease - along with the populations of lobsters these plants support. If the Department of Fisheries and Oceans intends to direct conservation management toward the preservation of ecosystems rather than individual fish stocks, it is well advised to persevere in its efforts to find ways of incorporating traditional ecological knowledge into its scientific database.

As a policy statement, **Canada's Ocean Strategy** speaks to many of the persistent controversies surrounding oceans management, but implementing a strategy built on the principle of integrated management will be challenging. With regard to the lobster fishery of Southwest Nova Scotia, implementation will require an increased federal capacity for response to issues originating in the three general areas discussed: the lobster fishing sector; the coastal communities; and in the marine ecosystem itself. In the lobster fishing sector, there is a need for more adequate representation of participants, including crew members; and there are issues concerning the incorporation of fishermen's input into federal fisheries policy. In coastal communities there are problems of disembeddedness, institutional decline, and a loss of control over local resources. In the case of the marine ecosystem, much remains to be learned about lobster population dynamics and the interaction of lobsters with other species; and a large body of traditional ecological knowledge has yet to be incorporated into mainstream lobster science.

APPENDIX A: INTERVIEW SCHEDULES

FOR CAPTAINS

I. My research focuses on the changes that have taken place in the lobster fishery in LFA 34 over the past fifty years. I am interviewing lobster license holders, crew members, and other members of fishing households as well as lobster buyers and processors, DFO managers and scientists and other members of the community who may be connected with the lobster fishery. I am interested in ways that the relationships between all of these people, so important to the success of the industry, may have changed over the years.

First I would like to ask you a few questions about your own background in the industry.

1. How long have you been involved in the lobster fishery? How did you become involved? How did you get your lobster license?
2. Have you also worked in other fisheries, or done other fisheries-related work? For how long? How did you become involved?
3. Have you also worked outside the fishing industry? Do you now? If so, what percent of your income comes from outside the fisheries?
4. Do members of your family participate in the fishery? Do they work with you?

II. The price of a lobster license in LFA 34 is high. The next questions are about who owns these licenses and how they were able to get them.

5. Who can afford to get a license? Do they usually come from the same community as the person they are buying the license from? Are they usually sons of fishermen? Do some people own more than one?
6. What are some of the ways that people can get lobster licenses now? (Probe: do they get help from banks, fish companies or other backers?)
7. When someone buys a license, does the price usually include a vessel and gear? Does the buyer of a license usually set his traps in the same places as the former owner?
8. Are there informal agreements about where each fisherman can set his traps? Are some places better than others?
9. Does it bother you that lobster licenses are sold to the highest bidder, even if the bidder lives in another community, regardless of the bidder's background, age, experience or need?

9.5. Is there some way that young people or people working in the back of the boat could be helped into the lobster fishery? [probe: Loan Board?]

III. The next few questions are about the lobster fishery itself, and its relationship with the other Atlantic fisheries.

10. Why do you think the lobster fishery has survived when most of the others have collapsed? Should some credit be given to fishermen, scientists, the DFO, or government policy, or is this a fluke of nature? Do you think the LFA 34 lobster fishery will still be as productive in five years?

10.5. What has been the biggest change in the lobster fishery since you started fishing?

11. Are there conflicts between the needs and activities of the lobster fishery and the needs and activities of any of the other fisheries? (probe: scallop fishery, aquaculture)

12. Are there other industries whose interests conflict with the lobster industry? (probe-offshore oil?)

IV. The next questions have to do with the way the lobster fishery is managed.

13. Do you think limited entry is fair? Do you think people should have been allowed to sell licenses in the first place?

14. How do you like the way the DFO manages the lobster fishery?

15. Have the industry workshops held over the last few years been helpful?

16. Do you generally agree with the findings and accept the recommendations of DFO fisheries scientists? Why or why not?

17. Do you generally agree with the findings and recommendations of the FRCC? Why or why not? What do you think of the 4-year lobster conservation plan to increase egg production? (probe: size limits? V-notching?)

18. Should fishermen have more say in lobster fishery management? How could this be accomplished?

V. The lobster fishery was probably the first fishery in Nova Scotia whose participants realized the negative effects of an unregulated harvest. The next questions are related to the issue of access to the fishery, the problem of poaching, the entry of First Nations people into the fishery, and DFO enforcement.

19. Many long-term legitimate professional fishermen are now out of work because of the decline in most of the Atlantic fisheries. Do you think it is fair that they cannot turn to lobstering, as they probably would have in the past when other species were scarce? Is there any way that some of them could participate without causing the stock to be overfished or without creating overcapacity in the industry?

20. Do you think the offshore lobster fishery should be permitted? What impact has the offshore fishery had on the stocks? On the industry in general?

21. What fishing rights do you think the Supreme Court's Marshall and Sparrow decisions actually gave to First Nations people? Do you agree with the Supreme Court on these issues?

22. What factor poses the greatest threat to the lobster stocks? [Suggestions: unrestricted fishing by First Nations members, off-season poaching by unlicensed "non-natives", licensed fishermen exceeding the trap limit or otherwise violating fisheries regulations]

23. What further steps could be taken to combat the illegal harvesting of lobster?

24. Is minor poaching activity ever tolerated in your area?

VI. The next set of questions is about lobster buyers and processors, and the marketing of lobster.

25. How do you market your lobsters? Who are your major customers? What path do the lobsters follow as they go from you to the retail customer?

26. Do you sometimes hold your catch to wait for a better price? Do you own or use lobster cars?

27. What are some alternative ways lobsters are marketed? Where are the natives marketing their lobster?

28. Are you satisfied with the prices and services that your lobster buyer provides? Do you ever shop around?

29. Do you think there is enough competition in the lobster processing industry?

30. Could you suggest improvements in the buying and processing sector? (Probe: fishing co-operatives?)

31. What has been the effect of Clearwater on the lobster industry?

32. [optional] I have heard that because of the high cost, fish processors and others who do not fish themselves have bought up a very large number of LFA 34 lobster licenses. Is this true? How many licenses do you think this involves? Is this a problem?

VII. The next set of questions deals with ways that the needs of lobster fishermen and other industry members are represented to the government and to the general public.

33. Do you think the LFA 34 Advisory Committee meetings are useful? Can you think of ways the advisory process could be improved? Do you feel you are properly represented by your port cluster delegate in those meetings?

34. Do you think the conferences and workshops put on for the lobster fishery in the last few years were helpful?

35. Do you think the new Atlantic Fishing Industry Alliance does a good job of representing the interests of the industry?

36. Do you think the Maritime Fishermen's Union does a good job of representing the interests of fishermen?

37. Are there other organizations or groups that are doing a good job of representing the interests of participants in the lobster fishing industry in southwest Nova Scotia? (Probe: are organizations useful or are fishermen better off acting independently?)

38. Do you belong to any fishing industry organizations? Are you an active participant?

VIII. The last set of questions is related to fishing communities and fishing households, with a focus on your own community.

39. How long have you lived in [respondent's current place of residence]?
Where are you from originally? In what year were you born?

40. What wharf do you fish from? How many lobster boats are there? Other boats?

41. Do you think of [r's town] as your community, or do you think of your community as a larger area [such as ?] What makes your community different or unique?

42. Do fishermen and their families in different communities have different ideas about the industry? Do they differ in other ways? Do they compete with each other? Examples?

43. Do you think that lobster licenses should be tied to communities or port clusters rather than circulating freely within the LFA?

43.5 Do you think the DFO has a responsibility to consider the well-being of fishing communities as well as preserving the fish stocks?

44. Income from the lobster fishery in Shelburne, Yarmouth and Digby Counties is a large part of the regional economy. How do non-fishing residents benefit from the fishery? Does much of the money made from the lobster fishery leave the region? Are there ways that more of this money could be kept in the community?

45. There is a lot of talk about fishing communities losing population as the fishing industry is "rationalized". Do you think there is a local future for the young people in your community? What opportunities do you see for them?

46. Do you have children in school, or other young relatives? Do you know what kind of future they imagine for themselves? Do they plan to stay in the region when they are finished with school? Do any of them plan to work in the fishing industry? In what capacity?

47. Is anyone else living in your household employed? What kind of work do they do?

48. Where do you get your:

Traps? [how do you set them]

Other gear?

Bait?

Fuel?

Boat? [What size, how old?]

49. How do you pay your crew? Is this a common way of paying? How else are people paid?

50. In which of these categories would you place your total household income last year

- a. Less than \$20,000
- b. \$20,000 - \$35,000
- c. \$35,000 - \$50,000
- d. \$50,000 - \$75,000
- e. more than \$75,000

61. What do you estimate your gross income from lobster fishery alone was last year?

- a. Less than \$100,000
- b. \$100,000 - \$150,000
- c. \$150,000 - \$200,000
- d. \$200,000 - \$300,000
- e. more than \$300,000

62. What was your personal net income from the lobster fishery last year?

- a. Less than \$20,000
- b. \$20,000 - \$35,000
- c. \$35,000 - \$50,000
- d. \$50,000 - \$75,000
- e. more than \$75,000

What percent was this of your total personal income last year?

FOR FISHERMEN'S WIVES

My research focuses on the changes that have taken place in the lobster fishery in LFA 34 over the past fifty years. I am interviewing lobster license holders, crew members, and other members of fishing households as well as lobster buyers and processors, DFO managers and scientists and other members of the community who may be connected with the lobster fishery. I am interested in ways that the relationships between all of these people, so important to the success of the industry, may have changed over the years.

The first few questions are about your own background.

1. Are you originally from this area? [If not, from where?]
2. Are you from a fishing family?
3. In your household, would you say that lobstering is a family business, or is it basically just your husband's occupation?
4. Do you participate in the lobster fishery in any way? Do you help with getting, or maintaining equipment or supplies? With cleaning the boat, other equipment, or work clothes? With selling the catch or doing the books? Making meals?
5. Have you done other fisheries-related work? [Explain]. How did you become involved?
6. Have you worked outside of the fishing industry?
7. How is life different in a fishing household than in other households?

The next few questions are about your local community.

8. What do you think of as your 'community'? Would it just be the town of _____, or does it cover a wider area?
9. What is unique or special about your community?
10. Lobster Fishing Area 34 covers a lot of area, from Barrington Passage to Digby Neck. Do you find that there is a lot of difference among the many fishing communities in this region? Are the lifestyles of fishing families fairly similar throughout the region?
11. What have been the biggest changes in your community in recent years? [Could follow up with a request for historical recollections of the area.]
12. What is the greatest challenge your community faces right now?

13. The fishing industry is a very important part of the local economy. What challenges does the fishing industry face right now? [Native fishery?]

14. Do you belong to any community groups or associations? Do you ever attend public meetings on community issues?

15. There is a lot of talk about fishing communities becoming smaller as the fishing industry is "rationalized". Do you think there is a local future for the young people in your community? What opportunities do you see for them?

16. If you have children or other young, school-age relatives, do you know what kind of future they imagine for themselves? Do they plan to stay in the region when they are finished with school? Do any of them plan to work in the fishing industry? In what capacity?

FOR LOBSTER BUYERS

My research focuses on the changes that have taken place in the lobster fishery in LFA 34 over the past fifty years. I am interviewing lobster license holders, crew members, and other members of fishing households as well as lobster buyers and processors, DFO managers and scientists and other members of the community who may be connected with the lobster fishery. I am interested in ways that the relationships between all of these people, so important to the success of the industry, may have changed over the years.

First I would like to ask you a few questions about your own background in the industry.

1. How long have you worked in the lobster buying/processing industry? How did you come to be involved in this sector?
2. Do you also have experience in other fisheries-related work? How did you first become involved in the fisheries?
3. Have you worked outside the fishing industry? In what capacity?
4. Do other members of your family work in the fishing industry? In what capacity?
5. Are you originally from this area? Do you come from a fishing family?

Next, some questions about the industry itself.

6. From the outside, at least, the Nova Scotia lobster industry seems to involve a complex web of relationships between fishermen, lobster buyers, and several levels of processors and exporters. Can you explain how a lobster gets from the fisherman's trap to the retail customer? [Followup: what do you do with the lobster you purchase? Do you have facilities to store lobster if prices are down?]
7. What kind of a business arrangement do you maintain with the lobster fishermen you buy from? Do you usually buy directly from fishermen, or do you get lobsters from intermediary buyers? Do you buy from a regular group of fishermen? In your area is there a lot of competition among buyers for the product? Do you sell bait, ice or other supplies, or provide other services for fishermen?
8. Can you tell me something about the structure of the Nova Scotia lobster industry? Is there a lot of competition among lobster dealers? Do many dealers export directly? Do the larger dealers tend to dominate the market?

9. Clearwater Fine Foods has grown rapidly, and in a relatively short time has become the most visible Maritime lobster dealer. What effect has the rise of Clearwater had on the regional lobster industry?

10. Why do you think the lobster fishery has survived when most of the others have collapsed? Should some credit be given to fishermen, scientists, the DFO, or government policy, or is this a fluke of nature? Do you expect the LFA 34 lobster fishery to be as productive in five years?

10.5. How do you like the way the DFO is managing the lobster fishery?

10.6. Are you satisfied with the way the provincial fisheries department operates?

11. The media now frequently cites the recently founded Nova Scotia Fishing Industry Alliance as an organization representative of the fisheries. Do you think the Alliance does a good job of representing the interests of the industry? Are you an active member of this or any other industry organization?

12. What fishing rights do you think that First Nations people have, based on the Marshall and Sparrow decisions? Is this fair?

Now, to conclude, a few questions about your company.

13. Are you open year-round, or seasonally?

14. How many year-round employees do you have? Seasonal employees? Part-time employees?

15. What products do you deal in? Can you estimate your approximate gross yearly sales? What percentage of your sales is in lobster?

16. Who are your five most important customers for lobster? Where are they located?

FOR DFO SCIENTISTS

My research focuses on the changes that have taken place in the lobster fishery in LFA 34 over the past fifty years. I am interviewing lobster license holders, crew members, and other members of fishing households as well as lobster buyers and processors, DFO managers and scientists and other members of the community who may be connected with the lobster fishery. I am interested in ways that the relationships between all of these people, so important to the success of the industry, may have changed over the years.

First I would like to ask you a few questions about your own background in the industry.

1. How long have you worked for the DFO? What circumstances led to you taking this job? What qualifications were required?
2. Before you came to DFO, were you involved in fisheries research in another capacity?
3. Are you originally from this area? Did you grow up in a fishing region?

Next, some questions about the industry itself.

4. Why do you think the lobster fishery has survived when most of the others have collapsed? Is this due to policy, conservation practices, the way this fishery is organized, or is it a fluke of nature? Do you think the LFA 34 lobster fishery will continue to be as productive in five years?
5. With larger vessels and the trawl system, lobster fishermen are able to pursue lobsters more aggressively in a much larger area. Does this partially explain the sustained high yields? Will this have an effect on stocks?
6. Some fishermen claim that the offshore fishery threatens stocks because the offshore is an important spawning ground and many large females are caught. The fact that the landed weight and average size has gone down in the offshore is considered ominous. Does the offshore fishery pose a threat to lobster stocks? Is it true that these are the same stocks as the inshore lobsters? Do lobsters move further offshore as they get larger?
7. From a conservation standpoint, is the summer fishery proposed by some native groups a viable option? Fishermen argue that lobsters are too 'catchable' in the bays during the summer, and that they are fragile and of poor quality because they are molting, and that because they are molting they are also mating at that time.
8. Have you observed any problems with v-notching? Some fishermen's arguments against are as follows: that the wound may not heal properly if the water is cold, that parasites such as sand fleas may attack notched lobsters, that few notched lobsters are re-

caught, that when they are re-caught soon after that they have dropped their eggs prematurely, and that v-notching would cause a dangerous imbalance of older females.

9. What are the biggest threats to the lobster stocks in LFA 34?

10. Is illegal lobster harvesting a serious problem? What aspect of the illegal fishery is the most threatening to the resource?

Next are some questions about DFO policy as it is conceived and applied.

11. How do you feel about the policy-making process in the lobster fishery? The LFA Advisory Committees? The FRCC? The Minister's autonomy? Do you think it would be useful or even possible to allow some policy to be made at the local, provincial or regional level? If so, how could this be done?

12. Some fishermen claim to feel betrayed by the DFO. They participated in workshops to develop a conservation plan, but in the end the Minister adopted the FRCC conservation plan unaltered. Some fishermen are using this as an excuse to file falsified or grossly inaccurate logbooks. In addition, other fishermen, fearful of the imposition of a quota system, are greatly over-reporting their catches to assure themselves of a large quota. How much do you or can you rely on data provided by fishermen when making assessments and predictions of stock status?

13. Are you comfortable with the policies the DFO has developed for LFA 34 and the lobster fishery in general? Do you think there is sufficient funding for the scientific research upon which conservation policy must be based?

FOR DFO OFFICIALS

My research focuses on the changes that have taken place in the lobster fishery in LFA 34 over the past fifty years. I am interviewing lobster license holders, crew members, and other members of fishing households as well as lobster buyers and processors, DFO managers and scientists and other members of the community who may be connected with the lobster fishery. I am interested in ways that the relationships between all of these people, so important to the success of the industry, may have changed over the years.

First I would like to ask you a few questions about your own background in the industry.

1. Could you explain the responsibilities your job entails? How long have you worked for the DFO? What circumstances led to you taking this job? What qualifications were required?
2. Before you came to DFO, were you involved in the fishing industry in another capacity?
3. Are you originally from this area? Do you come from a fishing family?

Next, some questions about the industry itself.

4. Why do you think the lobster fishery has survived when most of the others have collapsed? Is this due to policy, conservation practices, the way this fishery is organized, or is it a fluke of nature? Do you think the LFA 34 lobster fishery will continue to be as productive in five years?
5. What are the biggest problems you face as a DFO [manager/enforcement officer]?
6. Is illegal lobster harvesting a serious problem? What aspect of the illegal fishery is the most threatening to the resource?
7. How do you feel about the policy-making process in the lobster fishery? The LFA Advisory Committees? The RAP process? The FRCC? The Minister's autonomy? Do you think it would be useful or even possible to allow some policy to be made at the local, provincial or regional level? If so, how could this be done?
8. Are you generally comfortable with the policies the DFO has developed for LFA 34 and the lobster fishery in general? Do you usually agree with the recommendations of DFO scientists? Of the FRCC?

9. Are you comfortable with the approach that the DFO is taking with regard to native fishing rights? Do you feel the Marshall and Sparrow decisions clearly spell out the rights and responsibilities of First Nations people? Do they clearly identify who has these rights? Is further legislation needed to clarify these points?

**APPENDIX B:
LETTERS OF INFORMED CONSENT AND CONSENT FORM**

Letter of Informed Consent for Licensed Fishermen

Dear Participant,

As discussed in our recent conversation, I am a sociology student at Dalhousie University conducting research for a Ph.D. dissertation. I am interested in learning how people in southwestern Nova Scotia feel about the lobster industry. I will be interviewing fishermen and others involved in the lobster fishery as well as public officials and area residents who are not directly involved in the fishery.

My research will involve an informal interview lasting about one hour. I will be asking you some specific questions about your career as a fisher, your fishing operation and your opinion of how the fishery is being managed, but I am also interested in learning what you think are the important issues. Later I may request a short follow-up interview with you for clarification. Your participation is entirely voluntary and you may choose to withdraw from the interview and the project at any time. You may refuse to answer any of the questions I ask without terminating the interview. If you have given me permission to tape the interview you may still ask me to turn off the recorder at any time. Questionnaires and tapes will be stored in a locked cabinet in my office until the research project is completed. Questionnaires and tapes will be coded so that only I know the identity of the person interviewed. If you request it, information taken from you will be destroyed at the conclusion of the research project. Otherwise it will be stored perpetually in the Dalhousie Archive at the Killam Library in Halifax, with public access permitted after a period of 50 years.

What you tell me will remain confidential. When the information is used, every attempt will be made to protect your privacy by using different names and changing identifying characteristics. When I have finished my dissertation, a two-page non-academic summary of the findings or a verbal summary from me will be available to you on request. The dissertation itself will also be available to be read at the Sociology and Social Anthropology Department at Dalhousie University.

Any questions you have are welcome. You may also call me after the interview at 477-0061. If you would like to talk to someone else about the study feel free to call my doctoral supervisor Dr. Richard Apostle at 494-2020.

I really appreciate your time and help in my research. I hope participating will be interesting for you as well.

Sincerely,

David Flint

Letter of Informed Consent for Household Members

Dear Participant,

As discussed in our recent conversation, I am a sociology student at Dalhousie University conducting research for a Ph.D. dissertation. I am interested in learning how people in southwestern Nova Scotia feel about the lobster industry. I will be interviewing fishermen and others involved in the lobster fishery as well as public officials and area residents who are not directly involved in the fishery.

My research will involve an informal interview lasting about one hour. I will be asking you some specific questions about your involvement in the household fishing operation, about other ways in which you contribute to the household economy and about your opinion of how the fishery is being managed. I am also interested in learning what you think are the important issues. Later I may request a short follow-up interview with you for clarification. Your participation is entirely voluntary and you may choose to withdraw from the interview and the project at any time. You may refuse to answer any of the questions I ask without terminating the interview. If you have given me permission to tape the interview you may still ask me to turn off the recorder at any time.

Questionnaires and tapes will be stored in a locked cabinet in my office until the research project is completed. Questionnaires and tapes will be coded so that only I know the identity of the person interviewed. If you request it, information taken from you will be destroyed at the conclusion of the research project. Otherwise it will be stored perpetually in the Dalhousie Archive at the Killam Library in Halifax, with public access permitted after a period of 50 years.

What you tell me will remain confidential. When the information is used, every attempt will be made to protect your privacy by using different names and changing identifying characteristics. When I have finished my dissertation, a two-page non-academic summary of the findings or a verbal summary from me will be available to you on request. The dissertation itself will also be available to be read at the Sociology and Social Anthropology Department at Dalhousie University.

Any questions you have are welcome. You may also call me after the interview at 477-0061. If you would like to talk to someone else about the study feel free to call my doctoral supervisor Dr. Richard Apostle at 494-2020.

I really appreciate your time and help in my research. I hope participating will be interesting for you as well.

Sincerely,

David Flint

Letter of Informed Consent for Lobster Buyers

Dear Participant,

As discussed in our recent conversation, I am a sociology student at Dalhousie University conducting research for a Ph.D. dissertation. I am interested in learning how people in southwestern Nova Scotia feel about the lobster industry. I will be interviewing fishermen and others involved in the lobster fishery as well as public officials and area residents who are not directly involved in the fishery.

My research will involve an informal interview lasting about one hour. I will be asking you some specific questions about your career in the lobster processing industry, your relationships with sellers and buyers of lobster products and your opinion of how the fishery is being managed. I am also interested in learning what you think are the important issues. Later I may request a short follow-up interview with you for clarification. Your participation is entirely voluntary and you may choose to withdraw from the interview and the project at any time. You may refuse to answer any of the questions I ask without terminating the interview. If you have given me permission to tape the interview you may still ask me to turn off the recorder at any time. Questionnaires and tapes will be stored in a locked cabinet in my office until the research project is completed. Questionnaires and tapes will be coded so that only I know the identity of the person interviewed. If you request it, information taken from you will be destroyed at the conclusion of the research project. Otherwise it will be stored perpetually in the Dalhousie Archive at the Killam Library in Halifax, with public access permitted after a period of 50 years.

What you tell me will remain confidential. When the information is used, every attempt will be made to protect your privacy by using different names and changing identifying characteristics. When I have finished my dissertation, a two-page non-academic summary of the findings or a verbal summary from me will be available to you on request. The dissertation itself will also be available to be read at the Sociology and Social Anthropology Department at Dalhousie University.

Any questions you have are welcome. You may also call me after the interview at 477-0061. If you would like to talk to someone else about the study feel free to call my doctoral supervisor Dr. Richard Apostle at 494-2020.

I really appreciate your time and help in my research. I hope participating will be interesting for you as well.

Sincerely,

David Flint

Letter of Informed Consent for Fisheries Scientists

Dear Participant,

As discussed in our recent conversation, I am a sociology student at Dalhousie University conducting research for a Ph.D. dissertation. I am interested in learning how people in southwestern Nova Scotia feel about the lobster industry. I will be interviewing fishermen and others involved in the lobster fishery as well as public officials and area residents who are not directly involved in the fishery.

My research will involve an informal interview lasting about one hour. I will be asking you some specific questions about your career as a fisheries scientist, your area of responsibility in the DFO and your opinion of how the fishery is being managed. I am interested in your evaluation of the "local knowledge" of fishers. I am also interested in learning what you think are the important issues. Later I may request a short follow-up interview with you for clarification. Your participation is entirely voluntary and you may choose to withdraw from the interview and the project at any time. You may refuse to answer any of the questions I ask without terminating the interview. If you have given me permission to tape the interview you may still ask me to turn off the recorder at any time. Questionnaires and tapes will be stored in a locked cabinet in my office until the research project is completed. Questionnaires and tapes will be coded so that only I know the identity of the person interviewed. If you request it, information taken from you will be destroyed at the conclusion of the research project. Otherwise it will be stored perpetually in the Dalhousie Archive at the Killam Library in Halifax, with public access permitted after a period of 50 years.

What you tell me will remain confidential. When the information is used, every attempt will be made to protect your privacy by using different names and changing identifying characteristics. When I have finished my dissertation, a two-page non-academic summary of the findings or a verbal summary from me will be available to you on request. The dissertation itself will also be available to be read at the Sociology and Social Anthropology Department at Dalhousie University.

Any questions you have are welcome. You may also call me after the interview at 477-0061. If you would like to talk to someone else about the study feel free to call my doctoral supervisor Dr. Richard Apostle at 494-2020.

I really appreciate your time and help in my research. I hope participating will be interesting for you as well.

Sincerely,

David Flint

Letter of Informed Consent for DFO Officials

Dear Participant,

As discussed in our recent conversation, I am a sociology student at Dalhousie University conducting research for a Ph.D. dissertation. I am interested in learning how people in southwestern Nova Scotia feel about the lobster industry. I will be interviewing fishermen and others involved in the lobster fishery as well as public officials and area residents who are not directly involved in the fishery.

My research will involve an informal interview lasting about one hour. I will be asking you some specific questions about your career in the DFO, your area of responsibility and your opinion of how the fishery is being managed, but I am also interested in learning what you think are the important issues. Later I may request a short follow-up interview with you for clarification. Your participation is entirely voluntary and you may choose to withdraw from the interview and the project at any time. You may refuse to answer any of the questions I ask without terminating the interview. If you have given me permission to tape the interview you may still ask me to turn off the recorder at any time. Questionnaires and tapes will be stored in a locked cabinet in my office until the research project is completed. Questionnaires and tapes will be coded so that only I know the identity of the person interviewed. If you request it, information taken from you will be destroyed at the conclusion of the research project. Otherwise it will be stored perpetually in the Dalhousie Archive at the Killam Library in Halifax, with public access permitted after a period of 50 years.

What you tell me will remain confidential. When the information is used, every attempt will be made to protect your privacy by using different names and changing identifying characteristics. When I have finished my dissertation, a two-page non-academic summary of the findings or a verbal summary from me will be available to you on request. The dissertation itself will also be available to be read at the Sociology and Social Anthropology Department at Dalhousie University.

Any questions you have are welcome. You may also call me after the interview at 477-0061. If you would like to talk to someone else about the study feel free to call my doctoral supervisor Dr. Richard Apostle at 494-2020.

I really appreciate your time and help in my research. I hope participating will be interesting for you as well.

Sincerely,

David Flint

Consent Form for All Respondents

I agree to participate in David Flint's dissertation research.

Signature of respondent

I agree to allow the interview to be tape-recorded.

Signature of respondent

I wish to have all records of this interview destroyed upon completion of the research project.

Signature of respondent

Please send me a two page summary of the findings.

My address:

REFERENCES

- Acheson, James M. 1981. *Anthropology of fishing*. **Annual Review of Anthropology** 10: 275-316.
- 1988. **The Lobster Gangs of Maine**. Hanover: University Press of New England.
- Allain, Jane and Jean-Denis Frechette. 1993. **The Aboriginal Fisheries and the Sparrow Decision**. Ottawa: The Parliamentary Research Branch of the Library of Parliament. Retrieved October 30, 2002 from the World Wide Web: <http://www.parl.gc.ca/information/library/PRBpubs/bp341-e.htm>
- Annett, Kenneth H. 1999. *The role and influence of the English of Gaspesia*. Speech given to a conference of Anglophone Quebecers in Gaspé, August 4, 1999. Retrieved October 30, 2002 from the World Wide Web: http://www.geocities.com/athens/Forum/5443/role_and_influence.htm
- Apostle, Richard. 1998. *Marginal regions and postmodernity: resistance, adaptation and Collapse on the periphery*. In Nils Aarsæther and Jørgen Ole Bærenholdt (eds.), **Coping Strategies in the North: Local Practices in the Context of Global Restructuring**. Copenhagen: MOST: 71-90.
- Apostle, Richard, and Gene Barrett. 1992. *Communities and their social economy*. In Richard Apostle and Gene Barrett, (eds.), **Emptying Their Nets: Small Capital and Rural Industrialization in the Nova Scotia Fishing Industry**. Toronto: University of Toronto Press: 261-271.
- Apostle, Richard, Gene Barrett, Petter Holm, Svein Jentoft, Leigh Mazany, Bonnie McCay and Knut H. Mikalsen. 1998. **Community, State, and the Market on the North Atlantic Rim: Challenges to Modernity in the Fisheries**. Toronto: University of Toronto Press.
- Apostle, Richard, Bonnie McCay and Knut H. Mikalsen. 2002. **Enclosing the Commons: Individual Transferable Quotas in the Nova Scotia Fishery**. St. John's: ISER Books.
- Appadurai, Arjun. 1990. *Disjuncture and difference in the global economy*. **Theory, Culture and Society** 7: 295-310.
- Atlantic Fisherman**. 1998 (October). *Letter to the editor: Aboriginal lobster fishery in Western Nova Scotia*. 4-5.
- Atlantic States Marine Fisheries Commission. 2000. **Terms of Reference and Advisory Report for the American Lobster Stock Assessment Peer Review** (Stock Assessment Peer Review Report No. 00 – 01). Washington D.C.: Atlantic States Marine Fisheries Commission.

- Babbie, Earl R. 2002. **The Basics of Social Research**. Second Edition. Belmont, California: Wadsworth/Thomson Learning.
- Barrett, Gene. 1979. *Underdevelopment and social movements in the Nova Scotia fishing industry to 1938*. In Brym, Robert J. and R. James Sacouman (eds.), **Underdevelopment and Social Movements in Atlantic Canada**. Toronto: Hogtown Press: 127 - 160.
- 1984. *Capital and state in Atlantic Canada: the structural context of fisheries policy between 1939 and 1977*. In Cynthia Lamson and Arthur J. Hansen (eds.), **Atlantic Fisheries and Coastal Communities: Fisheries Decision-Making Case Studies**. Halifax: Dalhousie Ocean Studies Programme: 77-104.
 - 1992. *Mercantile and industrial development to 1945*. In Richard Apostle and Gene Barrett, (eds.), **Emptying Their Nets: Small Capital and Rural Industrialization in the Nova Scotia Fishing Industry**. Toronto: University of Toronto Press: 232 - 260.
- Bates, Stewart. 1944. **Report on the Canadian Atlantic Sea-Fishery**. Royal Commission on Provincial Development and Rehabilitation (Vol. IX): Halifax: King's Printer.
- Bellefontaine, Neil. 1998. Photocopied letter distributed to lobster fishermen at the LFA 34 Advisory Committee meeting of October 20, 1998.
- Binkley, Marian. 1995. **Risks, Dangers, and Rewards in the Nova Scotia Offshore Fishery**. Montreal and Kingston: McGill-Queen's University Press.
- 1996. *Nova Scotia fishing families coping with the fisheries crisis*. **Anthropologica** 38 (2): 197-220.
 - 2000. *'Getting by' in tough times: coping with the fisheries crisis*. **Women's Studies International Forum** 23 (3): 323-332.
 - 2003. **Set Adrift**. Toronto: University of Toronto Press.
- Botsford, L. W., J. E. Wilen and E. J. Richardson. 1986. **Biological and Economic Analysis of Lobster Fishery Policy in Maine: Report for the Committee of Marine Resources, State of Maine**. 112 Legislature. Augusta: Legislative Information Office.
- Boucher, Neil. 1980. **The Development of an Acadian Village: Surette's Island**. Yarmouth: Lescarbot Press.
- Boudreau, Blair. 1980. *La paroisse St-Michel* in Blair Boudreau (ed.), **Wedgeport et Ses Iles**. Yarmouth: l'Imprimerie Lescarbot Limitee: 11 - 15.

- Bourdieu, Pierre. 1977. **Outline of a Theory of Practice**. Cambridge: Cambridge University Press.
- Bowles, Francis P. and Margaret C. Bowles, 1989. *Holding the line: property rights in the lobster and herring fisheries of Mantinicus Island, Maine*. In John Cordell (ed.), **A Sea of Small Boats**. Cambridge: Cultural Survival, Inc.: 228 - 257.
- Braverman, Harry. 1974. **Labor and Monopoly Capital: the Degradation of Work in the Twentieth Century**. New York: Monthly Review Press.
- Brebner, John Bartlett. 1937. **The Neutral Yankees of Nova Scotia**. New York: Columbia University Press.
- Bromley, Daniel W. 1991. **Economy and the Environment: Property Rights and Public Policy**. Cambridge: Basil Blackwell, Inc.
- Brunk, Conrad and Scott Dunham. 2000. *Introduction: ecosystem justice in the Canadian fisheries*. In Harold Coward, Rosemary Ommers and Tony Pitcher (eds.), **Just Fish: Ethics and Canadian Marine Fisheries**. St. John's: ISER Books: 9 - 33.
- Buchanan, Allen and Deborah Mathieu. 1986. *Philosophy and justice*. In Ronald L. Cohen (ed.), **Justice: Views from The Social Sciences**. New York: Plenum Press: 11 - 46.
- Bull, Mary Kate. 1978. **Sandy Cove: The History of a Nova Scotia Village**. Hantsport: Lancelot Press.
- Calhoun, Sue. 1991. **A Word to Say: The Story of the Maritime Fishermen's Union**. Halifax: Nimbus Publishing Ltd.
- Campbell, J. R. 1876 [1972]. **A History of the County of Yarmouth, Nova Scotia**. Saint John: J. & A. McMillan [facsimile reprint by Mika Studio, Belleville, Ont.: 1972].
- Canada. 1902. **Fourth Census of Canada (1901). Vol. 1: Population**. Ottawa: Queen's Printer.
- Canada. Agriculture and Agri-Food Canada. 2001. **Fish and Seafood Online: Fact Sheets, Atlantic Lobster**. Retrieved October 30, 2002 from the World Wide Web: <http://ats.agr.ca/seafood/lobster-e.htm>
- Canada. Commission of Conservation. 1912. **Sea-Fisheries of Eastern Canada: Being The Proceedings of a Meeting of the Committee on Fisheries, Games and Fur-Bearing Animals of the Commission of Conservation, Held at Ottawa, June 4-5, 1912**. Ottawa: The Mortimer Co.

- Canada. Department of the Environment, Fisheries and Marine Service. 1975. **Lobster Fishery Task Force Final Report**. Ottawa: Supply and Services.
- 1976. **Policy for Canada's Commercial Fisheries**. Ottawa: Supply and Services.
- Canada. Department of Fisheries and Oceans. 1981. **Policy for Canada's Atlantic Fisheries in the 1980s: A Discussion Paper**. Ottawa: Communications Branch.
- 1986. **Atlantic Fishing License Directory 1986**. Canadian Special Publication of Fisheries and Aquatic Sciences 79. Ottawa: Atlantic Fisheries Service.
 - 1988. **Resource Prospects for Canada's Atlantic Fisheries, 1989 - 1993**. Ottawa: Communications Directorate.
 - 1989. **The Scotia-Fundy Lobster Fishery: Phase One: Issues and Considerations**. Halifax: Communications Branch, Scotia-Fundy Region.
 - 1990a. **Independent Review of the State of the Northern Cod Stock (Harris Report)**. Ottawa: Communications Directorate.
 - 1990b. **The Scotia-Fundy Lobster Fishery: Phase Two: Recommendations**. Halifax: Communications Branch, Scotia-Fundy Region.
 - 1992. **Scotia-Fundy Lobster Summary Sheets**. (D.S. Pezzack, ed.). Halifax.
 - 1993a. **Fisheries Management: A Proposal for Reforming Licensing, Allocation and Sanctions Systems**. Ottawa: Communications Directorate.
 - 1993b. *News release: Crosbie announces members and mandate of Fisheries Resource Conservation Council*.
 - 1997. **The Role of the Federal Government in the Oceans Sector**. Cat. No. Fs. 23-319/1997E. Ottawa: Communications Directorate.
 - 1998a. **Southwest Nova Scotia Lobster (LFA 34) Stock Status Report**. DFO Science Stock Status Report. C3-62. 10 pp. Dartmouth, N.S. : Maritimes Regional Advisory Process.
 - 1998b. **Eastern and South Shore Nova Scotia Lobster (LFAs 31 - 33)**. DFO Science Stock Status Report C3-60. 7 pp. Dartmouth, N.S. : Maritimes Regional Advisory Process.
 - 1998c. **Eastern Cape Breton Lobster (LFAs 27 - 30)**. DFO Science Stock Status Report C3-59. 6 pp. Dartmouth, N.S. : Maritimes Regional Advisory Process.

- 1999. **LFA 34 Lobster License Holders: 1999/2000**. An impromptu report in response to my access to information request (unpublished).
 - 2001a. **Canadian Lobster Atlantic Wide Studies (CLAWS) Symposium: Abstracts and Proceedings Summary**. (M. John Tremblay and Bernard Sainte-Marie, eds.). Ottawa: Fisheries and Oceans Canada, Science Branch.
 - 2001b. **Bay of Fundy Lobster (LFAs 35, 36, and 37) Stock Status Report**. DFO Science Stock Status Report C3-xx. 12 pp. Dartmouth, N.S. : Maritimes Regional Advisory Process
 - 2002. **Canada's Ocean Strategy**. Ottawa: DFO Oceans Directorate.
- Canada. Department of Fisheries and Oceans, Commercial Data Division. 1978a - 2000a (compiled annually). *Table 30: landed quantities by species by vessel length*. Unpublished data.
- Canada. Department of Fisheries and Oceans, Commercial Data Division. 1978b - 2000b (compiled annually). *Table 31: landed values by species by vessel length*. Unpublished data.
- Canada. Department of Marine and Fisheries. 1899. **Report of the Canadian Lobster Commission, 1898 (The Prince Commission)**. Thirty-first Annual Report of the Department of Marine and Fisheries, Supplement 1. Ottawa: Queen's Printer.
- Canada. Dominion Bureau of Statistics. 1953. **Ninth Census of Canada (1951). Vol. 1: Population**. Ottawa: Queen's Printer.
- 1962. **Census of Canada 1961. Part 1: Geographical Distributions**. Ottawa: Queen's Printer.
- Canada. Dominion Bureau of Statistics, Fisheries Section. 1954. **Fisheries Statistics of Canada: Nova Scotia 1953**. Ottawa: Queen's Printer.
- Canada. Dominion Bureau of Statistics, Industry and Merchandising Division. 1965. **Fisheries Statistics Nova Scotia 1963**. Ottawa: Queen's Printer.
- Canada. Fisheries Resource Conservation Council. 1993. *News release: Fisheries Resource Conservation Council recommends Atlantic groundfish conservation measures*.
- 1995. **A Conservation Framework for Atlantic Lobster: Report to the Minister of Fisheries and Oceans**. Ottawa: Supply and Services Canada.
- Canada. Ministry of Trade, Industry and Commerce. 1974. **1971 Census of Canada**. Ottawa: Information Canada.

- Canada. Office of the Auditor General. 1999. **Fisheries and Oceans: Managing Atlantic Shellfish in a Sustainable Manner**. Ottawa: Office of the Auditor General of Canada
- Canada. Royal Commission Investigating the Fisheries of the Maritime Provinces And the Magdalen Islands (MacLean Commission). 1928. **Report**. Ottawa: King's Printer.
- Canada. Sessional Papers. 1874. Vol. 3, First Session of the Third Parliament. Appendix O. **Special Report on Certain Petitions Against the Regulation Affecting the Lobster Fishery**. Ottawa: Queen's Printer.
- 1888. Vol. 8, Sixth Session of the Sixth Parliament. **Report on the Lobster Fishery of Canada**. Ottawa: Queen's Printer.
- 1893. Vol. 7, Third Session of the Seventh Parliament. Section 10d. **Report on the Lobster Industry of Canada, 1892**. Ottawa: Queen's Printer.
- Canada. Statistics Canada. 1982. **Census Divisions: Selected Characteristics (1981 Census of Canada)**. Cat. No. 95-902. Ottawa: Industry Canada.
- 1988. **Profile of Census Divisions and Subdivisions in Nova Scotia (1986 Census of Canada)**. Cat. No. 95-184-XPB. Ottawa: Industry Canada.
- 1994. **Profile of Census Divisions and Subdivisions in Nova Scotia Part B (1991 Census of Canada)**. Cat. No. 95-313. Ottawa: Industry Canada.
- 1999. **Profile of Census Divisions and Subdivisions in Nova Scotia (1996 Census of Canada)**. Cat. No. 95-184-XPB. Ottawa: Industry Canada.
- 2002. **Guide to the Labour Force Survey**. Cat. No. 71-543-GIE. Ottawa: Industry Canada.
- Canada. Statistics Canada, Manufacturing and Primary Industries Division. 1973. **Fisheries Statistics Nova Scotia: 1972**. Ottawa: Information Canada.
- Canada. Statutes of Canada. 1996. Second Session, Thirty-fifth Parliament. **Chapter 31: An Act respecting the oceans of Canada**. Ottawa: Canada Communications Group.
- Canada. Supreme Court of Canada. 1990 **R. v. Sparrow**. 1 S. C., file no. 20311. May 31, 1990. Retrieved October 22, 2002 from the World Wide Web: <http://www.lexum.umontreal.ca/csc-scc/en/pub/1990>.

- 1999a. **R. v. Marshall (the "Marshall Decision")**. 3 S. C. R., file no. 21014. September 17, 1999. Retrieved October 22, 2002 from the World Wide Web: <http://www.lexum.umontreal.ca/csc-scc/en/pub/1999>
 - 1999b. **R. v. Marshall (the "Marshall Decision Clarification")**. 3 S. C. R. 533, file no. 21014. November 17, 1999. Retrieved October 22, 2002 from the World Wide Web: <http://www.lexum.umontreal.ca/csc-scc/en/pub/1999>.
- Canada. Task Force on Atlantic Fisheries. 1982. **Navigating Troubled Waters: A New Policy for the Atlantic Fisheries (Kirby Report)**. Ottawa: Supply and Services.
- Canada-U.S. Workshop on Status of Assessment Science for Northwest Atlantic Lobster Stocks. 1980. **Proceedings of the Canada-U.S. Workshop on Status of the Northwest Atlantic Lobster (*Homarus americanus*) Stocks (St. Andrews, New Brunswick, Oct. 24-26, 1978)**. Canadian technical report of fisheries and aquatic sciences no. 932. St. Andrews: Biological Station.
- Canadian Atlantic Lobster Promotion Association (CALPA). 1998. **Canadian Atlantic Lobster: Buyer's Guide** (brochure). Beach Point, P. E. I.: CALPA.
- Charles, Anthony. 1992. *Canadian fisheries: paradigms and policy*. In David VanderZwaag (ed.). **Canadian Ocean Law and Policy**. Toronto: Butterworths Canada Ltd.: 3-26.
- Chiaramonte, Louis J. 1970. **Craftsman-Client Contracts: Interpersonal Relations in a Newfoundland Fishing Village**. St. John's: ISER Books.
- Christie, Innis, and A. Paul Pross. 1990. *Introduction*. In A. Paul Pross, Innis Christie and John A. Yogis (eds.), **Commissions of Inquiry**. Toronto: Carswell Publications: 1-20.
- Clark, Andrew Hill. 1968. **Acadia: The Geography of Early Nova Scotia to 1760**. Madison: University of Wisconsin Press.
- Clark, Margaret Elwyn. 1988. *Managing uncertainty: family, religion, and collective action among fishermen's wives in Gloucester, Massachusetts*. In Janet Nadel-Klein and Dona Lee Davis (eds.), **To Work and to Weep: Women in Fishing Economies**. St. John's: ISER: 261-278.
- Clayton, R., S. Nolan and R. Duggan. 1998. **Associations among LFA 33 Lobster Fisheries** (working paper). Ottawa: Canadian Stock Assessment Secretariat. 43 pp.
- Cohen, Anthony. 1985. **The Symbolic Construction of Community**. London: Tavistock Press.

- Cohen, Ronald L. 1986. *Introduction*. In Cohen, Ronald L. (ed.), **Justice: Views from The Social Sciences**. New York: Plenum Press: 1 - 10.
- Comeau, Tina. 2002. *Black market lobster caper - three charged*. In the **Sou'wester**: Vol. 34, no. 16 (June 1, 2002): 8.
- Coward, Harold, Rosemary Ommer and Tony Pitcher (eds.). 2000. **Just Fish: Ethics and Canadian Marine Fisheries**. St. John's: ISER Books.
- Crowell, Edwin. 1923. **A History of Barrington Township and Vicinity**. Yarmouth: Published by the author.
- Daniel, Peter C., Robert C. Bayer, and Cheryl Waltz. 1989. *Egg production of v-notched American lobsters (*Homarus americanus*) along coastal Maine*. **Journal of Crustacean Biology** 9 (1): 77-82.
- Davis, Anthony. 1984a. *Property rights and access management in the small boat fishery: a case study from southwest Nova Scotia*. In Cynthia Lamson and Arthur J. Hanson (eds.), **Atlantic Fisheries and Coastal Communities: Fisheries Decision-making Case Studies**. Halifax: Dalhousie Ocean Studies Programme: 133 - 165.
- 1984b. **"You're Your Own Boss": An Economic Anthropology of Small Boat Fishing in Port Lameron Harbour, Southwest Nova Scotia**. Unpublished Ph.D. thesis, University of Toronto.
- 1991. **Dire Straits: The Dilemmas of a Fishery: The Case of Digby Neck and the Islands**. St. John's: ISER Books.
- Davis, Dona Lee. 1988. *"Shore skippers" and "grass widows": active and passive women's roles in a Newfoundland fishery*. In Jane Nadel-Klein and Dona Lee Davis (eds.), **To Work and to Weep: Women in Fishing Economies**. St. John's: ISER Books: 211-229.
- 2000. *Gendered cultures of conflict and discontent: living 'the crisis' in a Newfoundland community*. **Women's Studies International Forum** 23 (1): 343-353.
- DeWolf, A. Gordon. 1969. **The Economic Effects of Regulations in the Maritime Provinces Lobster Fishery**. Unpublished M.A. thesis, Dalhousie University.
- 1974. **The Lobster Fishery of the Maritime Provinces: Economic Effects of Regulations**. Bulletin 187 (Fisheries Resource Board of Canada). Ottawa: Department of the Environment, Fisheries, and Marine Service.
- d' Entremont, Rev. Clarence J. 1981. **History of Wedgeport 1767 - 1967**. Pubnico: Published by the author.

- Dhaliwal, Herb. 2000. *Update on fisheries affected by the Supreme Court's Marshall Decision*. Published statement by Fisheries Minister Herb Dhaliwal, August 10.
- Dow, R. L. 1980. *The clawed lobster fisheries*. In J. S. Cobb and B. F. Phillips (eds.), **The Biology and Management of Lobsters. Vol. II. Ecology and Management**. Toronto: Academic Press: 390.
- Durkheim, Emile. 1972. *The science of morality*. In Anthony Giddens (ed.), **Emile Durkheim: Selected Writings**. Cambridge: Cambridge University Press: 89 - 107.
- Durrenberger, E. Paul, and Gislí Pálsson. 1987. *The grass roots and the state: resource Management in Icelandic fishing*. In Bonnie J. McCay and James M. Acheson (eds.), **The Question of the Commons: The Culture and Ecology of Communal Resources**. Tucson: The University of Arizona Press: 370 - 92.
- Elner, R. W. and A. Campbell. 1991. *Spatial and temporal patterns of recruitment for American lobster, Homarus americanus, in the northwestern Atlantic*. **Memoirs of the Queensland Museum** 31: 349-363.
- Faris, James C. 1973. **Cat Harbour: A Newfoundland Fishing Settlement**. St. John's: ISER Books.
- Finlayson, Alan Christopher. 1994. **Fishing For Truth: A Sociological Analysis of Northern Cod Stock Assessments from 1977 to 1990**. St. John's: ISER Books.
- Flint, John David. 1996. **Family Farming in Western Newfoundland: Production and Exchange Strategies in a Remote Agricultural Region**. Truro: Rural Research Centre.
- Foucault, Michel. 1980. *Two lectures*. In Colin Gordin (ed.), **Power/Knowledge: Selected Interviews and Other Writings 1972 - 1977**. New York: Pantheon Books: 78-108.
- Found, W. A. 1912. *The lobster fishery of Canada*. In Commission of Conservation, Canada (ed.), **Sea-Fisheries of Eastern Canada**. Ottawa: The Mortimer Co.: 50-60.
- Friedmann, Harriet. 1980. *Household production and the national economy: concepts For the analysis of agrarian formations*. **Journal of Peasant Studies**: 7: 158-84.
- Gardiner Barber, Pauline. 1995. *Invisible labour, international lives: gendered work and new social fields in coastal Philippines*. **Culture**: 15 (2): 5-26.

- Gendron, Louise, Réjeanne Camirand and Josée Archambault. 2000. *Knowledge-sharing between fishers and scientists: towards a better understanding of the status of lobster stocks in the Magdalen Islands*. In Barbara Neis and Lawrence Felt (eds.), **Finding Our Sea Legs: Linking Fishery People and Their Knowledge with Science and Management**. St. John's: ISER Books: 56 - 71.
- Giasson, Marie. 1992. *Capital and work-force adaptation in Clare*. In Richard Apostle and Gene Barrett, (eds.), **Emptying Their Nets: Small Capital and Rural Industrialization in the Nova Scotia Fishing Industry**. Toronto: University of Toronto Press: 232 - 260.
- Goodman, D. And M. Redclift. 1985. *Capitalism, petty commodity production and the farm enterprise*. **Sociologia Ruralis** 26: 231 - 247.
- Gordon, H. Scott. 1998. *The economic theory of a common-property resource: the fishery*. In John A. Baden and Douglas S. Noonan (eds.), **Managing the Commons**. Second Edition. Bloomington: Indiana University Press: 17 - 38. Reprinted from **Journal of Political Economy** 62 (1954): 124 - 42.
- Gorham, Rob. 1998 (June 20). *The lobster trap*. **The Halifax Chronicle-Herald**: C1.
- Gramsci, Antonio. 1971. **Selections From the Prison Notebooks**. New York: International Publishers.
- Grant, Ruth Fulton. 1934. **The Canadian Atlantic Fishery**. Toronto: The Ryerson Press.
- Gray, John. 1998. **False Dawn: The Delusions of Global Capitalism**. New York: The New Press.
- Gringeri, Christina. 1996. *Making Cadillacs and Buicks for General Motors*. In Eileen Boris (ed.), **Homeworkers in Global Perspective: Invisible No More**. New York: Routledge: 180 - 201.
- Gwyn, Julian. 1990. *Economic fluctuations in wartime Nova Scotia, 1755 – 1815*. In Margaret Conrad (ed.), **Making Adjustments: Change and Continuity in Planter Nova Scotia, 1759 – 1800**. Fredericton: Acadiensis Press: 45 – 59.
- Hardin, G. 1968. *The tragedy of the commons*. **Science**: 162: 1243 - 48.
- Harvey, David. 1989. **The Condition of Postmodernity**. Oxford: Basil Blackwell.
- 1996. **Justice, Nature and the Geography of Difference**. Oxford: Blackwell Publishers Ltd.
- Hays, Samuel P. 1959. **Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890 - 1920**. Cambridge: Harvard University Press.

- Hilborn, Ray and Carl J. Walters. 1992. **Quantitative Fisheries Stock Assessment: Choice, Dynamics and Uncertainty**. New York: Chapman and Hall.
- Hollingsworth, S. 1787. **The Present State of Nova Scotia with a Brief Account of Canada and the British Islands on the Coast of North America**. Second Edition. Edinburgh: William Creech and T. Longman.
- Hughes, Charles C., Marc-Adelard Trembley, Robert N. Rapoport and Alexander H. Leighton. 1960. **People of Cove and Woodlot**. New York: Basic Books, Inc.
- Iacobucci, Frank. 1990. *Commissions of inquiry and public policy in Canada*. In A. Paul Pross, Innis Christie and John A. Yogis (eds.), **Commissions of Inquiry**. Toronto: Carswell Publications: 21-28.
- Innis, Harold A. 1954. **The Cod Fisheries: The History of an International Economy**. Revised Edition. Toronto: University of Toronto Press.
- Jansen, Janni Margaretha. 1981. *Regional socio-economic development: the case of fishing in Atlantic Canada*. Unpublished Ph.D. thesis, Rutgers University. Ann Arbor: University Microfilms International.
- Jentoft, Svein and Knut Mikalsen. 1994. *Regulating fjord fisheries: folk management or interest group politics?* In Christopher L. Dyer and James R. McGoodwin (eds.), **Folk Management in the World's Fisheries: Lessons for Modern Fisheries Management**. Niwot: University Press of Colorado: 287 - 316.
- Johnstone, Kenneth. 1977. **The Aquatic Explorers: A History of the Fisheries Research Board of Canada**. Toronto: University of Toronto Press.
- Kearney, John F. 1984. **Working Together: A Study of Fishermen's Response to Government Management of the District 4A Lobster Fishery**. Pointe-de-L'Église: Université Sainte-Anne.
- 1989. *Co-management or co-optation? The ambiguities of lobster fishery management in Southwest Nova Scotia*. In Evelyn Pinkerton (ed.), **Co-operative Management of Local Fisheries: New Directions for Improved Management and Community Development**. Vancouver: University of British Columbia Press: 85 - 102.
- Kearney, John and Pauline MacIntosh (eds.) 1998a. **LFA 34 Lobster Management Workshop: Proceedings**. Antigonish: Extension Department, St. Francis Xavier University.
- 1998b. **The Second LFA 34 Lobster Management Workshop: Proceedings**. Antigonish: Extension Department, St. Francis Xavier University.

- Kimber, Stephen. 1989. **Net Profits: The Story of National Sea**. Halifax: Nimbus Publishing Ltd.
- Knickle, David Graham. 1983. **An Inquiry into the Feasibility of Replacing the Offshore Scallop Fleet of Nova Scotia**. Unpublished MBA research project, St. Mary's University, Halifax.
- Kuhn, Thomas. 1970. **The Structure of Scientific Revolutions**. Chicago: University of Chicago Press.
- Kukathas, Chandran and Philip Pettit. 1990. **Rawls: A Theory of Justice and its Critics**. Cambridge: Polity Press.
- Larkin, Maureen. 1990. **Our Way of Living: Survival Strategies in Lobster Fishing Households in Prince Edward Island**. Unpublished M. A. thesis. Memorial University of Newfoundland.
- LeBlanc, Mike. 1984. *Fisheries administration in Canada: a synopsis*. In Cynthia Lamson and Arthur J. Hansen (eds.), **Atlantic Fisheries and Coastal Communities: Fisheries Decision-Making Case Studies**. Halifax: Dalhousie Ocean Studies Programme: 243 - 51.
- Lescarbot, Marc. 1609 [1911]. **The History of New France, Vol. II**. Translated by W. L. Grant. Toronto: The Champlain Society.
- Li, Tania Murray. 1996. *Images of community: discourse and strategy in property relations*. **Development and Change**. 27 (3): 501-527.
- Lipietz, Alain. 1992. **Towards a New Economic Order**. New York: Oxford University Press.
- Lobster Fishing Area 34. 1998. **Conservation Harvesting Plan for the 1998 - 1999 Season**. Unpublished photocopied document released by the LFA 34 Lobster Management Workshop.
- Lofland, John, and Lyn H. Lofland. 1984. **Analyzing Social Settings: A Guide to Qualitative Observation and Analysis**, second edition. Belmont, California: Wadsworth Publishing Company.
- MacDonald, Martha and M. Patricia Connelly. 1989. *Class and gender in fishing communities in Nova Scotia*. **Studies in Political Economy** 30: 61-85.
- MacKinnon, Neil. 1986. **This Unfriendly Soil: The Loyalist Experience in Nova Scotia 1783 - 1791**. Kingston: McGill - Queen's University Press.

- Mahaffie, Charles D. Jr. 1995. **A Land of Discord Always**. Camden, Maine: Down East Books.
- Mailhot, José. 1993. **Traditional Ecological Knowledge: The Diversity of Knowledge Systems and Their Study**. Montreal: The Great Whale Public Review Support Office.
- Marchak, Patricia. 1987. *Uncommon property*. In Patricia Marchak, Neil Guppy, and John McMullan (eds.), **Uncommon Property: The Fishing and Fish-Processing Industries in British Columbia**. Toronto: Methuen Publications: 3-32.
- Marcus, George E. 1998. **Ethnography Through Thick and Thin**. Princeton: Princeton University Press.
- Marsden, Terry. 1993. **Constructing the Countryside**. Boulder: Westview Press.
- Marshall, Gordon (ed.). 1994. **The Concise Oxford Dictionary of Sociology**. Oxford: Oxford University Press.
- Marshall, Joan. 2001. *Connectivity and restructuring: identity and gender relations in a fishing community*. **Gender, Place and Culture**. 8 (4): 391-401.
- Marx, Karl. 1977. **Capital Volume One**. New York: Vintage Books.
- Matthews, David Ralph. 1976. **"There's No Better Place Than Here": Social Change in Three Newfoundland Communities**. Toronto: Peter Martin Associates Ltd.
- 1993. **Controlling Common Property: Regulating Canada's East Coast Fishery**. Toronto: University of Toronto Press.
- McCay, Bonnie J. 1988. *Fish guts, hair nets, and unemployment stamps: women and Work in co-operative fish plants*. In Peter R. Sinclair (ed.), **A Question of Survival**. St. John's: ISER Books: 105 - 132.
- McCay, Bonnie J. and James M. Acheson. 1987. *Human ecology of the commons*. In Bonnie J. McCay and James M. Acheson (eds.), **The Question of the Commons: The Culture and Ecology of Communal Resources**. Tucson: The University of Arizona Press: 1 - 36.
- McCreath, Peter L. and John G. Leefe. 1982. **History of Early Nova Scotia**. Tantallon: Four East Publications.
- McGoodwin, James R. 1990. **Crisis in the World's Fisheries: People, Problems, and Policies**. Stanford: Stanford University Press.

- McMichael, Philip. 1996. **Development and Social Change: A Global Perspective.** Thousand Oaks, CA: Pine Forge Press.
- McMullan, John L., David C. Perrier and Norman Okihiro. 1993. *Regulation, illegality and social conflict in the Nova Scotia lobster fishery.* **Journal of Legal Pluralism and Unofficial Law:** 33: 121 - 46
- McMullan, John L. And David C. Perrier. 1997. *Poaching vs. the law: the social organization of illegal fishing.* In John L. McMullan, David C. Perrier, Stephen Smith and Peter D. Swan (eds.), **Crimes, Laws and Communities.** Halifax: Fernwood Publishing: 29 - 59.
- Meuse, Alain. 2002 (January 15). *Alleged lobster scam could cost millions to governments.* **The Sou'wester:** page 3.
- Mittelman, James H. 2000. **The Globalization Syndrome: Transformation and Resistance.** Princeton: Princeton University Press.
- Nadel-Klein, Jane. 1988. *A fisher laddie needs a fisher lassie: endogamy and work in a Scottish fishing village.* In Jane Nadel-Klein and Dona Lee Davis (eds.), **To Work and to Weep: Women in Fishing Economies.** St. John's: ISER Books: 190-210.
- Nadel-Klein, Jane and Dona Lee Davis (eds.). 1988. **To Work and to Weep: Women in Fishing Economies.** St. John's: ISER Books.
- Nagel, Thomas. 1978. *Rawls on justice.* In Daniels, Norman (ed.), **Reading Rawls: Critical Studies on Rawls' A Theory of Justice.** New York: Basic Books, Inc.: 1-15.
- Nash, June. 1994. *Global integration and subsistence insecurity.* **American Anthropologist** 96 (1): 7-30.
- Neis, Barbara and Lawrence Felt. 2000. *Introduction.* In Barbara Neis and Lawrence Felt (eds.), **Finding Our Sea Legs: Linking Fishery People and Their Knowledge with Science and Management.** St. John's: ISER Books: 11-24.
- Neis, Barbara and Melanie Morris. 2000. *Creative, ecosystem, and distributive justice and Newfoundland's capelin fisheries.* In Harold Coward, Rosemary Ommer and Tony Pitcher (eds.), **Just Fish: Ethics and Canadian Marine Fisheries.** St. John's: ISER Books: 174-200.
- Nemec, Thomas F. 1979. *I fish with my brother: the structure and behaviour of agnatic-Based fishing crews in a Newfoundland Irish outport.* In Raoul Anderson, (ed.), **North Atlantic Maritime Cultures.** The Hague: Mouton Publishers: 9-34.

- Newell, Dianne. 1993. **Tangled Webs of History: Indians and the Law in Canada's Pacific Coast Fisheries**. Toronto: University of Toronto Press.
- Nicosia, Frank and Kari Lavalli. 1999. *Homarid lobster hatcheries: their history and role in research, management and aquaculture*. **Marine Fisheries Review** 61 (2): 1 - 58.
- Northey, Margot, Lorne Tepperman and James Russell. 2002. **Making Sense: A Student's Guide to Research and Writing**. Toronto: Oxford University Press.
- Nova Scotia. 2002. **Workers' Compensation General Regulations**. Halifax: Registry of Regulations.
- Nova Scotia. Department of Agriculture and Fisheries. 2001. Unpublished fisheries data, obtained by request from the Department.
- Nova Scotia. Department of Fisheries and Aquaculture. 1999. **Nova Scotia Seafood Directory**. Halifax: Nova Scotia Department of Fisheries and Aquaculture.
- Nova Scotia. Department of Tourism and Culture. 2002. **2000 Nova Scotia Visitor Traffic Report**. Halifax: Nova Scotia Department of Tourism and Culture.
- Nova Scotia. Department of Trade and Industry. 1949. **Nova Scotia Fisheries Yearbook**. Halifax: Nova Scotia Department of Trade and Industry.
- O'Malley, Martin. 2001. *An inquiry into inquiries*. In **CBC Indepth Backgrounder: Royal Commissions**. Retrieved October 30, 2002 from the World Wide Web: http://cbc.ca/news/indepth/background/royal_commissions.html.
- Parsons, L. S. 1993. **Management of Marine Fisheries in Canada**. Canadian Bulletin of Fisheries and Aquatic Sciences 225. Ottawa: National Research Council and the Department of Fisheries and Oceans.
- Pezzack, Douglas. 1996. **Lobster Conservation Tools for the Bay of Fundy: Information Package**. Halifax: DFO. (Distributed to LFA Advisory Committee members in 1997.)
- 1999. **"Egg per Recruit Handout."** (Unpublished document distributed to LFA 34 Advisory Committee members in 1999.)
- Pezzack, Douglas, C. F. Frail, P. Lawton, D. A. Robichaud, M. B. Strong. 1999. **Update on the Stock Status of American Lobster, *Homarus americanus*, Lobster Fishing Areas 34**. Ottawa: Canadian Stock Assessment Secretariat.

- Pezzack, Douglas, C. F. Frail, P. Lawton, M. B. Strong, D. A. Robichaud and P. Carroll. 2001. **Spatial patterns in Landing, Effort and Molt Groups in Lobster Fishing Areas 34 and 41 during the 1998/99 and 1999/2000 Fishing Seasons.** Ottawa: Canadian Stock Assessment Secretariat.
- Porter, Marilyn. 1985. *The "tangly bunch": outport women of the Avalon Peninsula.* **Newfoundland Studies** 1: 77-90.
- 1987. *Peripheral women: towards a feminist analysis of the Atlantic Region.* **Studies in Political Economy** 23: 41-72.
- Pothier, Delbert. 1980. *Fishing memories of Wedgeport.* In Blair Boudreau (ed.), **Wedgeport et Ses Iles.** Yarmouth: l'Imprimerie Lescarbot Limiteé: 91-6.
- Pothier, Israel. 1980. *Tuna fishing.* In Blair Boudreau (ed.), **Wedgeport et Ses Iles.** Yarmouth: l'Imprimerie Lescarbot Limiteé: 91-6.
- Powles, Howard. 2001. *Biological reference points for lobster: a discussion paper - CLAWS symposium.* In M. John Tremblay and Bernard Sainte-Marie (eds.), **Canadian Lobster Atlantic Wide Studies (CLAWS) Symposium: Abstracts and Proceedings Summary.** Ottawa: Fisheries and Oceans Canada, Science Branch: 72 - 4.
- Pringle, J. D. 1986. *Structure of certain North American government fishery agencies and effective resource management.* **Ocean Management** 10: 11 - 20.
- Pringle, J. D. and D. L. Burke. 1993. *The Canadian lobster fishery and its management, with emphasis on the Scotia Shelf and the Gulf of Maine.* In L. S. Parsons and W. H. Lear (eds.), **Perspectives on Canadian Marine Fisheries Management.** Canadian Bulletin of Fisheries and Aquatic Sciences 226. Ottawa: National Research Council and the Department of Fisheries and Oceans: 91 - 122.
- Pringle, J. D. and A. Campbell. 1987. *Lobster research - back to basics.* **Science Review 1987.** Ottawa: Supply and Services: 18 - 21.
- Pringle, J. D., D. G. Robinson, G. P. Ennis and P. Dubé. 1983. *An overview of the management of the lobster fishery in Atlantic Canada.* Fisheries Research Board of Canada Manuscript Report 1701: 103pp.
- Rawls, John. 1972. **A Theory of Justice.** Oxford: Clarendon Press.
- 1993. **Political Liberalism.** New York: Columbia University Press.
- Recchia, Maria L. 1997. **Catching Lobsters in a Community Mesh: The Dynamics of Local Lobster Management on the Grand Manan Archipelago.** Unpublished Master of Environmental Studies thesis, Dalhousie University.

- Reid, John. 1990. *Change and continuity in Nova Scotia, 1758-1775*. In Margaret Conrad (ed.), **Making Adjustments: Change and Continuity in Planter Nova Scotia, 1759 – 1800**. Fredericton: Acadiensis Press: 45–59.
- Richardson, Evelyn M. 1960. **My Other Islands**. Toronto: Ryerson Press.
- Richardson, Stephan A. 1952. *Technological change: some effects on three Canadian fishing villages*. **Human Organization** 11 (3): 17-27.
- Ricker, Jackson. 1941. **Historical Sketches of Glenwood and the Argyles**. Truro: Truro Printing and Publishing Company.
- Robinson, D. G. 1979. **Consideration of the Lobster (*Homarus americanus*) Recruitment Overfishing Hypothesis, with Special Reference to the Canso Causeway**. Fisheries And Marine Services Technical Report 834. Ottawa: Supply and Services: 77-99.
- Ross, Sally and Alphonse Deveau. 1992. **The Acadians of Nova Scotia Past and Present**. Halifax: Nimbus Publishing.
- Rutherford, J. B., D. G. Wilder and H. C. Frick. 1967. **An Economic Appraisal of the Canadian Lobster Fishery**. Fisheries Research Board of Canada Bulletin 157. St. Andrews: Biological Station.
- Sacouman, R. James. 1979. *The differing origins, organization, and impact of Maritime and Prairie co-operative movements to 1940*. In Brym, Robert J. and R. James Sacouman (eds.), **Underdevelopment and Social Movements in Atlantic Canada**. Toronto: Hogtown Press: 37 - 58.
- Samson, Daniel. 1994. *Afterword: capitalism and modernization in the Atlantic Canada countryside*. In Daniel Samson (ed.), **Contested Countryside: Rural Workers and Modern Society in Atlantic Canada, 1800 - 1950**. Fredericton: Acadiensis Press: 34 - 69.
- Schick, Amy. 1998. *Lobster lessons: a six-part series*. Reprinted from **Commercial Fisheries News**, August 1998 - November 1998 in the CFN Archives. Retrieved October 30, 2002 from the World Wide Web: <http://www.fish-news.com/CFNArchives/loblessons1.html>. 15 pages.
- Scott, Anthony and Maurice Tugwell. 1981. **The Public Regulation of Commercial Fisheries in Canada. Case Study No. 1: The Maritime Lobster Fishery**. Technical Report No. 16. Ottawa: Economic Council of Canada.
- Shea, Phil. 1990. **Brier Island: Land's End in the Bay of Fundy**. Hantsport: Lancelot Press.

- Sinclair, Peter R. 1980. *Agricultural policy and the decline of commercial family farming: a comparative analysis of the U. S., Sweden, and the Netherlands*. In Frederick H. Buttel and Howard Newby (eds.), **The Rural Sociology of the Advanced Societies: Critical Perspectives**. Montclair: Allanheld, Osmun: 327-49.
- 1985. **From Traps to Draggers**. St. John's: ISER Books.
 - 1988. *Introduction*. In Peter R. Sinclair (ed.), **A Question of Survival: The Fisheries and Newfoundland Society**. St. John's: ISER Books: 1-22.
- Sinclair, Peter R. and Lawrence F. Felt. 1992. *Separate worlds: gender and domestic Labour in an isolated fishing region*. **Canadian Review of Sociology and Anthropology** 29 (1): 55 - 71.
- Smith, Dorothy E. 1990. **The Conceptual Practices of Power: A Feminist Sociology of Knowledge**. Toronto: University of Toronto Press.
- Sommer, Robert, and Barbara A. Sommer. 1986. **A Practical Guide to Behavioral Research: Tools and Techniques**. Second edition. New York: Oxford University Press.
- Sou'wester 1999a (October 1). *Decision leaves more questions than answers*. 9-10.
- 1999b (November 1). *Eight days of protest ends peacefully, for now and The Marshall Decision: a chronology of events - part ii. 2, 22-3*.
 - 2000 (August 15). *DFO maintaining integrity in food fishery*. 20.
 - 2001a (May 1). Advertisement: Tri Nav Marine Brokers. 30.
 - 2001b (November 1). Advertisement: Tri Nav Marine Brokers. 22.
- Stewart, Gordon and George Rawlyk. 1972. **A People Highly Favoured of God**. Toronto: MacMillan of Canada.
- Stiles, R. Geoffrey. 1979. *Fishermen, wives and radios: aspects of communication in a Newfoundland fishing community*. In Raoul Anderson (ed.), **North Atlantic Maritime Cultures**. The Hague: Mouton Publishers: 35 - 60.
- Streeck, Wolfgang and Philippe C. Schmitter. 1985. *Community, market, state - and associations? The prospective contribution of interest governments to social order*. In Streeck, Wolfgang and Philippe C. Schmitter (eds.), **Private Interest Government: Beyond Market and State**. London: SAGE Publications.

- Sumaila, Ussif Rashid and Mahamudu Bawumia. 2000. *Ecosystem justice and the marketplace*. In Coward, Harold, Rosemary Ommer and Tony Pitcher (eds.), **Just Fish: Ethics and Canadian Marine Fisheries**. St. John's: ISER Books : 140-153.
- Sweeney, E. M. 1993. **From Little Boats: A Short History of the Township of Yarmouth**. Tantallon: Four East Publications Ltd.
- Taylor, Lawrence. 1987. *"The river would run red with blood": community and common property in an Irish fishing settlement*. In Bonnie J. McCay and James M. Acheson (eds.), **The Question of the Commons: The Culture and Ecology of Communal Resources**. Tucson: The University of Arizona Press: 290 - 310.
- Templeman, W. 1935. *Lobster tagging in the Gulf of St. Lawrence*. **Journal of the Biological Board of Canada**. 1(4): 269 - 278.
- 1937. *Habits and distribution of larval lobsters*. **Journal of the Biological Board of Canada**. 3(4): 343 - 7.
- 1958. *Lath-spacing in lobster traps*. In Fisheries Research Board of Canada, **Progress Reports of the Atlantic Coast Stations**. 69: 14-5.
- Thiessen, Victor, Anthony Davis and Svein Jentoft. 1992. *The veiled crew: an exploratory study of wives' reported and desired contributions to coastal fishing enterprises in Northern Norway and Nova Scotia*. **Human Organization**. 51 (4): 342-52.
- Tremblay, M. J., and M. D. Eagles. 1998. *Eastern Cape Breton lobster (LFA 27-30): stock status and eggs-per-recruit estimates*. Ottawa: Canadian Stock Assessment Secretariat Research Document 98/124. 28 pp.
- United Nations Conference on Environment and Development. 1993. **Agenda 21: Programme of Action for Sustainable Development**. New York: United Nations.
- Veltmeyer, Harry. 1979. *The capitalist underdevelopment of Atlantic Canada*. In Brym, Robert J. and R. James Sacouman (eds.), **Underdevelopment and Social Movements in Atlantic Canada**. Toronto: Hogtown Press: 17 - 36.
- Wadel, Cato. 1969. **Marginal Adaptations and Modernization in Newfoundland: A Study of Strategies and Implications in the Resettlement and Redevelopment of Outport Fishing Communities**. St. John's: ISER Books.
- Waters, Malcolm. 2001. **Globalization** (Second Edition). London: Routledge.
- Watt, John W. 1963. **A Brief Review of the Fisheries of Nova Scotia**. Halifax: Department of Trade and Industry, Province of Nova Scotia.

- Watts, Michael. 1992. *Living under contract: work, production politics and the manufacturing of discontent in a peasant society*. In Allen Pred and Michael Watts (eds.), **Reworking Modernity: Capitalisms and Symbolic Discontents**. New Brunswick: Rutgers University Press: 65 - 105.
- Weber, Max. 1946. *Politics as a vocation*. In Gerth, H. H. And C. Wright Mills (eds.), **From Max Weber: Essays in Sociology**. New York: Oxford University Press: 77 - 128.
- 1947. **The Theory of Social and Economic Organization**. New York: The Free Press.
 - 1949. **The Methodology of the Social Sciences**. New York: The Free Press.
- Webster, John Clarence. 1934. **Acadia at the End of the Seventeenth Century: Letters, Journals and Memoirs of Joseph Robineau de Villebon**. Saint John: The New Brunswick Museum.
- Whatmore, Sarah. 1991. **Farming Women: Gender, Work and Family Enterprise**. London: Methuen.
- Wilder, D. G. 1943. *The effects of lath spacing and size of fishing ring on the catch of lobster traps*. Fisheries Research Board of Canada, **Progress Reports of Atlantic Coast Stations**. 34. 22-4.
- 1953. *The growth rate of the American lobster (Homarus americanus)*. **Journal of the Fisheries Research Board of Canada**. 10 (3). 371-412.
 - 1963. *Movements, growth, and survival of marked and tagged lobsters liberated in Egmont Bay, Prince Edward Island*. **Journal of the Fisheries Research Board of Canada**. 20 (2). 305-318.
 - 1965. *Lobster conservation in Canada*. In **Fisheries Research Board of Canada Studies Series 1039**. Ottawa: Fisheries Research Board of Canada: 21-29.
- Wilson, Isaiah W. 1900 [1975]. **A Geography and History of the County of Digby, Nova Scotia**. Halifax: Published by the author. [Facsimile reprint by Mika Publishing Co., Belleville, Ont.: 1975]
- Wolfe, Eric. 1982. **Europe and the People Without History**. Berkeley: University of California Press.