

THE UNIVERSITY OF MANITOBA

THE ORGANIZATION OF PRODUCTION AND MARKET RELATIONS
IN A NOVA SCOTIAN INSHORE FISHING COMMUNITY

by

ADAM FRANCIS ANTHONY DAVIS

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF ARTS

DEPARTMENT OF ANTHROPOLOGY

October 1975



"THE ORGANIZATION OF PRODUCTION AND MARKET RELATIONS
IN A NOVA SCOTIAN INSHORE FISHING COMMUNITY"

by

ADAM FRANCIS ANTHONY DAVIS

A dissertation submitted to the Faculty of Graduate Studies of
the University of Manitoba in partial fulfillment of the requirements
of the degree of

MASTER OF ARTS

© 1975

Permission has been granted to the LIBRARY OF THE UNIVER-
SITY OF MANITOBA to lend or sell copies of this dissertation, to
the NATIONAL LIBRARY OF CANADA to microfilm this
dissertation and to lend or sell copies of the film, and UNIVERSITY
MICROFILMS to publish an abstract of this dissertation.

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

ABSTRACT

This thesis analyzes the organization of production and market relations in an inshore fishing community on the southwestern shore of Nova Scotia. Field work upon which the study is based was carried out between May and September 1974. Traditional anthropological field techniques, particularly participant-observation, were employed in collecting the data. The theoretical approach used in the analysis is rooted in the materialist themes underlying a cultural ecological approach.

The thesis describes the articulation of environmental characteristics and historical events affecting economic relations which motivated the settlement and development of the inshore fishery in the Pagesville, Nova Scotia region. Changes in external market conditions were adjusted to by fishermen through the adoption of lobstering and the gasoline powered, Cape Island fishing boat. The role of women's labour in production was eliminated by the late 1920's with the introduction of federal standards for the processed product. In addition, the fishermen's control of production was reduced to 'from the water to the wharf!!' The organization of production and market relations in contemporary Pagesville is the product of these forces and events.

The effective use of the material means of production depends on the fishermen's practical understanding of marine ecology. By acquiring an understanding of those aspects of marine ecology which most directly affect the behaviour of commercially valuable species, the fishermen attempt to minimize risk and maximize their chances of "a good day's fishing." The accumulation of this type of information is essential for success and may be considered an adaptation to the hunting character of fishing.

The social mechanisms governing the recruitment of labour, the composition of crews, the collection of information, the development of reciprocal exchange and mutual help relations, and the emphasis on co-operation are rooted in the requirements of successful commercial fishing. The social organization of production is the product of the demands placed on the fishermen for the effective use of a series of technologies and strategies within the constraints of the marine environment.

The fishermen are economically tied, through a credit system, to the local fish company which provides their only link with the external market. The federal government, through its policies and legislation, is directly assisting in the proletarianization of the inshore fishermen.

The relationship between ecological, economic, and historical factors has shaped the inshore fishermen's organization of production and market relations. The same processes, in the

form of decreasing fish and lobster stocks, governmental policies, and changing market conditions, are posing major problems in the economic well-being of inshore fishermen and the survival of the inshore fishing industry.

Preface

The field work for this study was carried out over four months during the summer of 1974 (May-September). Pagesville was selected because it visually fulfilled the criteria, i.e., population size, economic commitment to fishing and lobstering, location in an important lobstering region, and distance from major towns and cities, which I used to evaluate small communities while driving along the South Shore of Nova Scotia. I depended heavily on the traditional anthropological techniques of participation and observation in gathering data. In other words, I spent a great deal of time on the water learning the art of fishing and at dock side watching what went on. Much of the information in this thesis was obtained in the course of numerous informal conversations with fishermen. Other data-gathering methods were also employed from time to time. I conducted five open-ended interviews, two of which were tape recorded. In my opinion, field work of short duration can only rely on informal methods of data gathering because it takes a much longer time to establish the rapport and personal relations with informants that permit the researcher to reliably use 'objective' methods. The research for this study is exploratory in nature and is the first step towards a longer

and more intensive period of field work.

Following Faris (1972), I have used fictitious names for the communities and the persons involved in this study. First names were randomly selected from those commonly used in Pagesville-the Brazils. Surnames are disguised in a colour code. The purpose of this is to protect the confidence of those people who offered information and assistance.

From the point of view of research objectives, I believe that most of the goals I set have been realized. I found the four months in the field to be a rewarding and enriching experience. My wife and I are fortunate to have developed close friendships with several people in Pagesville-the Brazils as a result of the research opportunity. In many ways, I consider this to be the most important aspect of the experience.

Acknowledgements

I would like to thank my thesis committee, John S. Brierly, Roderick E. Burchard, Raymond E. Wiest, and especially Hymie Rubenstein, my committee chairperson, for support, encouragement, and constructive criticism. I am also grateful to Louise E. Sweet for the challenges and support which she offered throughout the various stages of the research.

A special debt of gratitude is owed to Margaret Hanna for the superb job on the figures and maps and Ms. Candice Hammock for her optimism, curses, prodding, and incredible typing. Also, a thanks is extended to Robert Fraser for advice, encouragement, and criticism.

For stimulation and constant support, I wish to give Rain a special thanks. When apprehension and depression were winning she drove them away. Lastly, I want to express gratitude to the people of Pagesville-the Brazils, particularly the Browns and the Greens, for opening their homes and their hearts to a couple of strangers.

Table of Contents

		Page
Preface		i
Acknowledgements		iii
List of Tables		vi
List of Maps		vii
List of Figures		viii
 Chapter		
1	Introduction	1
	Thesis Outline	9
2	Environment, History, and Setting	10
	The Environment	10
	Settlement and History	23
	Setting	48
	Summary	51
3	Technology and the Ecology of Fishing	52
	Technology	53
	The Ecology of Inshore Fishing	68
	The Ecology of Lobstering	85
	Knowing and Using the Grounds	96
	Territoriality	102
	Markets and the Ecology of Production	106
	Summary	108
4	The Social Organization of Production	109
	Crew Composition	112
	Division of the Catch	122
	Reciprocal Relations and Information Flow	126
	Summary	143

5	Market Relations	145
	The 'Truck System' Mercantile Economy	147
	A Note on the Influence of Government Action	161
	Summary	165
6	Conclusions	167
	Notes	176
	References Cited	178

List of Tables

Table		Page
1	A Summary of Monthly Sunlight Hours, Mean Temperature (F degrees), Precipitation (inches) for Brazil, 1964-74	17
2	Men Employed by Type of Fishery	33
3	Cultivated Land Compared with Total Land Occupied	34
4	Population in the Port Lameron Census Sub-District, 1870-1971	36
5	Landed Weights (lbs.) for Lobster by Season, 1971-73	92
6	Portion of the Seasons During Which the Major Percentage of Lobster Was Landed	93
7	Cognition and the Catch	106
8	Crew Composition - Fishing	113
9	Sharemen by Relation to Skipper by Method	114
10	Crew Composition - Lobstering	120
11	Catch Records, Expenses, Incomes	151
12	Export Value (\$/lb.), Main Marine Species, 1967-73	156
13	Landed Value (\$/lb.), Main Marine Species, 1967-73 (Nova Scotia)	156
14	Landed Values as a Percentage of Export Values, 1967-73	156
15	Percentage Increase in Landed Values Compared with Percentage Increase in Export Values, 1967-73	157

List of Maps

Map		Page
1	The Southwestern Coast of Nova Scotia	11
2	The Pagesville Region	13
3	The Pagesville Peninsula	15
4	The Pagesville Resource Area	98

List of Figures

Figure		Page
1	Cross Sections of the Pagesville Ground	23
2	A 'Fleet' of Longline	60
3	The Lobster Pot	64
4	The Basic Food-Chain of the Marine Environment	75
5	The Food-Chain of the Benthic Ecosystem	90

CHAPTER 1

INTRODUCTION

This thesis describes and explains the organization of production and market relations in a fishing community located on the southwestern shore of Nova Scotia. Over the last twenty years there has been an increasing amount of anthropological research concerned with fishermen and fishing cultures. The published material can be divided into two general categories: studies of labour intensive peasant fishermen (cf. Breton 1973; Faris 1972; Forman 1970; Firth 1966; Nietschmann 1973) and studies of industrial fishermen organized on a quasi-factory basis in a capital intensive industry (cf. Tunstall 1964; Wadel 1972). The fishermen dealt with in this study are self-employed, petty commodity producers who own and control the material means of production. They fish for the purpose of providing a valuable commodity for an urban-based, commercial market. Very little, if any, of their productive efforts can be thought of as subsistence oriented. In other words, the relation of these fishermen to the industrial, urban economy is identical to that of North American farmers. As primary producers, they are a vital and thoroughly integrated part of the industrial economy.

The theoretical perspective used here could best be characterized as rooted in cultural ecology with emphasis on the materialist themes underlying this orientation. As Nietschmann (1972:1) has noted:

Hunters do not range randomly through their environments in search of game. Nor do fishermen move aimlessly across stretches of water seeking undifferentiated fish. Hunting and fishing efforts are usually highly focused on specific animals, in specific locales, and at specific times of the year.

The functional relationship which exists between the fishermen's productive efforts and those characteristics of marine ecology that most directly effect the behaviour of commercially valuable species is readily apparent in the fishermen's daily and seasonal cycles of activity. In fact, aspects of their use of time and the importance of certain intra-fishermen exchange relationships can be considered as responses to the need of maximizing the chances at 'a good day's fishing' given that the fishermen do not have any means of controlling the availability of fish and lobster.

The concepts of environmental potential and subsistence risk, as developed by Porter (1965;1970), are particularly useful in this context. Initially, Porter notes that the potential of any given environment is a function of technological capability coupled with the social organization of production (Porter 1965:409; 1970:190). Expanding on this theme, he states that:

All human activities involve risk. Men have devised individual and institutional strategies to cope with these dangers...It is, I feel, in the geography of subsistence risks that a meaningful link can be forged between subsistence economies and environmental potentials. Subsistence risk is not given in nature, it is a settlement negotiated between an environment and a technology... We may assume that in the degree to which the situation is tenuous, adjustment to risk is the essential element in the articulation of subsistence with environment (Porter 1965:411-412).

Success in terms of minimizing risk rests on the ability of Western North Atlantic inshore fishermen to negotiate a settlement between their mode of production and the marine environment. This negotiation is the product of the relationship between historical processes, technological developments, market demands and human needs.

In commercial fishing, environmental potential is defined in a slightly different manner than it is in pre-industrial economies. Although the effective articulation of technological strategies and the social organization of production within the context of the marine environment must be considered important in the interpretation of environmental potentials, the market place in the industrial economy is, in the final analysis, the key element in the equation. By this I mean it is the market place that defines which species of fish will pay and thereby provide the fishermen with a livelihood. As the result of this factor, the overall potential of the marine environment, from the fisherman's

point of view, is dramatically limited. Hence, in attempting to minimize risk, the fishermen must endeavour to maximize production within the constraints set by the market place.

A comprehensive understanding, on the part of the fishermen, of those characteristics of their 'effective' marine environment which influence their access to commercial fish is essential if they hope to realize 'a good day's fishing'. In other words, the fishermen must know about the marine environment before they can use it to their productive advantage. It is this factor which explains the non-randomness of their mode of production. The organization of production of the inshore fishermen in the Western North Atlantic can only be appreciated within such a context.

This position is consistent with that expressed in most of the literature concerned with cultural ecology. For example, Netting has asserted that in utilizing the ecological approach:

We begin with the functionalist notion that "institutions are instrumentalities fulfilling certain ends (Goldschmidt 1959:120)" and focus on those institutions whose purpose is production or protection and show most clearly the links of reciprocal influence with exploitative activities...The following factors seem to be regularly and instrumentally related to ecological considerations.

- 1/ The size, density, and aggregation of the population.
- 2/ The division of labour and the composition of productive groups.
- 3/ The rights to the means of production. (Netting 1968:16).

Starting with the notion that the purpose and organization of social production rests upon human needs to meet certain material requirements, such as procuring food, the cultural ecologist concentrates his attention on the manner in which humans act on and are influenced by their 'effective' environmental context in striving to realize material objectives. This involves a thorough examination of those social forms, institutions, and cultural strategies which most directly influence access to the material means of production and the manner of human utilization of and articulation with the environment. The reason this method of study has been used primarily in the context of non-industrial production is that it best suits situations in which humans obtain their subsistence directly from the natural environment.

The applicability of the ecological method to a study of the organization of production among Nova Scotian inshore fishermen is evident in that, although they are petty commodity producers in an industrial economy, their production pivots on an intimate interrelationship with and a thorough understanding of the marine environment. Inshore fishing is a hunting activity in which the fishermen must locate the fish before they can catch them. This demands an understanding of the marine environment so that production may be maximized. It should be made clear that this factor only operates at the fisherman's level of production. He

has almost no influence on the market and the prices he receives for his catch. The industrial-commercial market place determines the parameters of the fisherman's 'effective' environment. Indeed, when we leave the fisherman's organization of production and begin talking about market relations, we start dealing with a totally different system of relations which are based on the nature of exchange within a market economy.

In this study I deal with two separate but inter-related phenomena: the inshore fishermen's mode of production and the concomitant area of market relations. I examine the historical, economic, and ecological considerations that have fashioned the manner in which fish and lobster are caught and sold.

A mode of production emerges from the interplay of factors such as historical processes, e.g., changes in market conditions which effect production capabilities by altering the availability of labour, the social and material requirements for the effective use of any given technologies, e.g., the mechanisms by which producers gain access to the material means of production and membership in the social relations of production, and the necessity of minimizing risk and maximizing returns for productive efforts. The role of the fishermen's interrelationship with their 'effective' environment is particularly important in this process. A mode of production

has a specific direction in terms of its action on and exploitation of particular environmental relationships and desired species. The non-randomness of production stipulates that the technologies and social relations associated with production must accommodate ecological realities in the course of their development. Moreover, the success or failure of changes in any mode of production is a function of the ability of the 'new' mode of production to minimize risk within the context of the 'effective' environment, regardless of changes in external material conditions. Only through using an ecological perspective within the context of historical materialism can we best appreciate the nature of the organization of production in groups such as Nova Scotian inshore fishermen.

In examining the organization of production and market relations, considerations such as the importance of access to information resources, intra-harbour exchange relationships, crew composition, and technological strategies are dealt with in detail. Moreover, I emphasize three specific processes involved in the fashioning of the organization of production and market relations.

1. Social Change. Since cultural ecological studies have tended to emphasize synchronic interaction while giving little consideration to the processes of diachronic change (cf. Rappaport

1967; Nietschmann 1973), I intend to illustrate the manner in which the organization of production and market relations among the Nova Scotian inshore fishermen in Pagesville have undergone dramatic change over the last one hundred years as a result of their marginal position in the industrial, commercial market economy. In particular, I show the impact that external changes in market conditions have had on the fishermen's relationship with their effective environment.

2. Territoriality. The notion of 'territoriality' among inshore fishermen has been offered as one of the basic characteristics in their organization of production (cf. Acheson 1972; Forman 1970). Contrary to this, I suggest that the intensity of the fishermen's sense of 'ownership' or 'control' over specific resource areas is a function of fluctuating ecological relationships which effect the occurrence and abundance of important commercial species.

3. Proletarianization. I illustrate that, over the past one hundred years, policies initiated by the provincial and federal governments have led to the progressive proletarianization of the inshore fishermen. At the same time, these governmental initiatives have been designed in a manner to encourage the development of a capital, as opposed to labour, intensive fishing industry. I show that policies concerning

areas such as boat subsidy programmes, processing standards, and unemployment insurance benefits have functioned to force men out of the inshore fishing industry and into the offshore industry, to progressively restrict the fishermen's control over the fish product, to alienate the role of women's labour from the production process, and to benefit the growth of large, semi-monopolistic fish companies.

Thesis Outline

Chapter 2 describes the environmental setting and historical background of the Pagesville-Brazils area in southwestern Nova Scotia. An emphasis is placed on the environmental factors and historical processes which motivated settlement, encouraged the development of the inshore fishery, and fashioned the contemporary organization of production. Chapter 3 deals with the main technological strategies as well as a detailed discussion of the ecology of fishing and lobstering. This chapter focuses on the fishermen's perceptions and use of the marine environment. Chapter 4 describes the inshore fishermen's social organization of production. The principles governing crew composition, division of the value of the catch, intra-harbour reciprocal relations and information flow are dealt with in detail. Chapter 5 examines aspects of 'harbour-level' exchange, the relationship between the fishermen and the fish buyer, and the role of governmental policies. Chapter 6 summarizes the main findings of the study and makes several recommendations for future research.

CHAPTER 2

ENVIRONMENT, HISTORY, AND SETTING

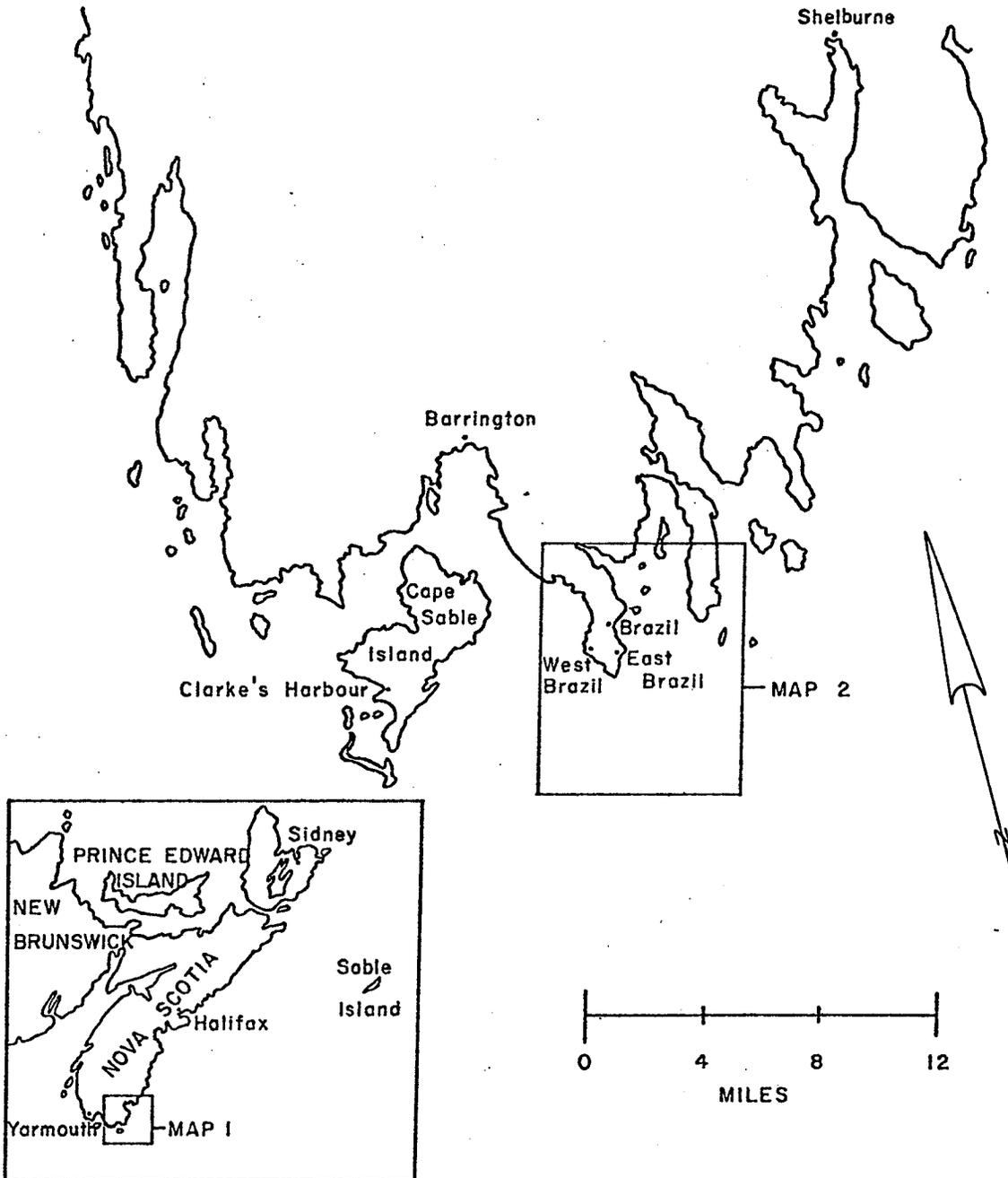
The Pagesville region is located approximately 160 miles southwest of Halifax and 60 miles northeast of Yarmouth on the South Shore of Nova Scotia (Map 1). The origin and development of the inshore fishery in this area was a function, to a large extent, of historic forces and environmental characteristics. In this chapter those aspects of the physical environment critical to the establishment of an inshore fishery are described and discussed. An emphasis is placed on the historical forces which motivated the settlement of the region and fashioned the contemporary situation.

The Environment

The coastline of southwestern Nova Scotia is characterized by a high degree of irregularity and roughness. Steep headlands, deep bays, reefs, and rocky islands, the result of massive glacial action, are the dominant features of the landscape (Clark 1968:21; Clibbon and Hamelin 1968:64). The Pagesville landscape and seacoast reflect this general pattern. The communities on the northeastern side of the peninsula are located on an estuary which extends approximately five miles inland. Although deep in parts, the great number

MAP 1

The Southwestern Coast of Nova Scotia



Adapted from: Department of Mines and Technical Surveys.
National Topographic Series. Sheet 20-0, p.

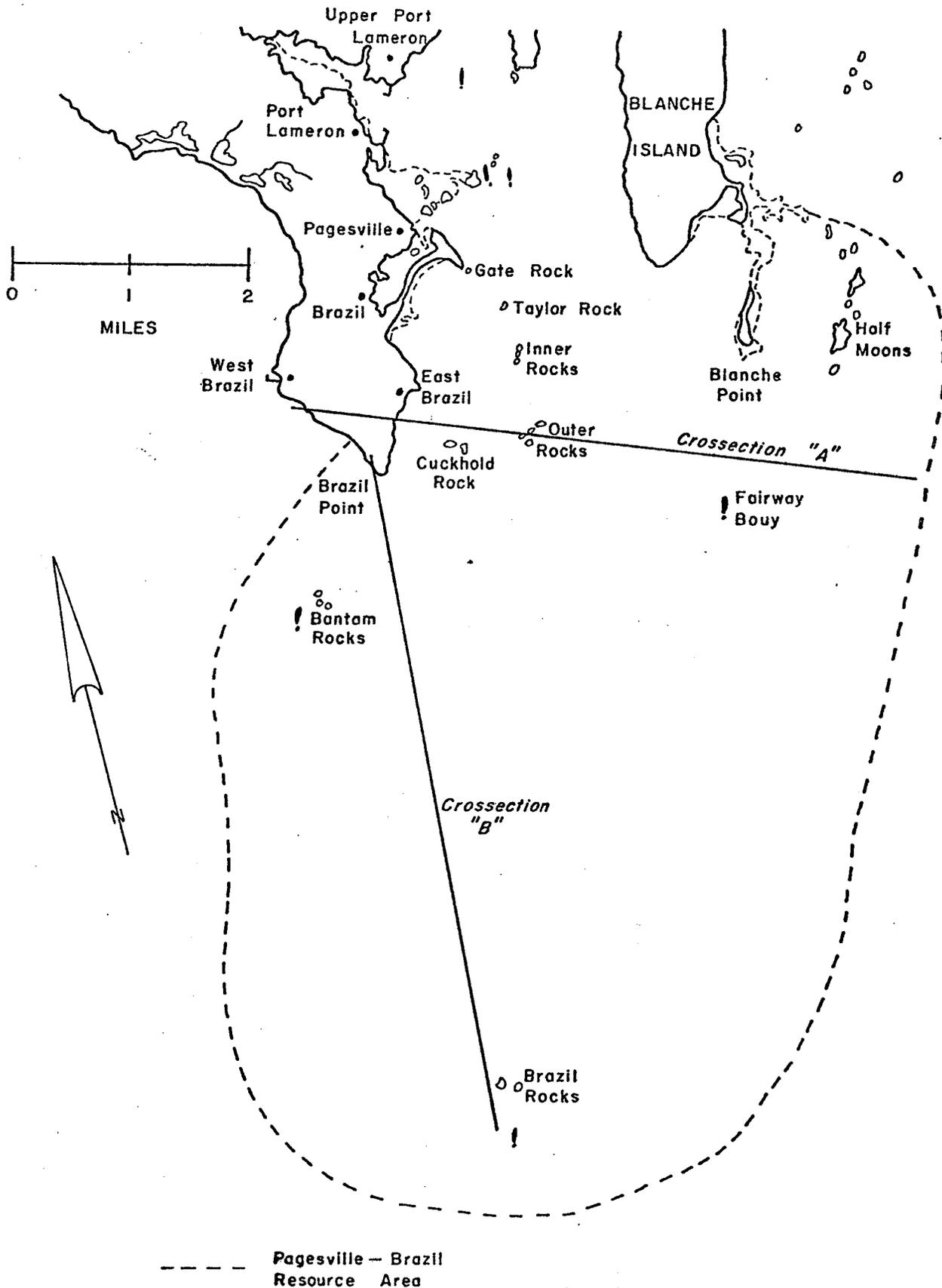
of rocky islands, reefs, and semi-submerged rocks that characterize the estuary, limit its use to shallow-draft vessels (Map 3).

The protective value of the Upper Port Lameron and Port Lameron harbour facilities is drastically limited because the southwest side of the estuary, the Pagesville peninsula, extends approximately two miles further out into the Atlantic than its northeast side, Blanche Island. Hence, boats moored in these harbours receive little protection from storms and wave action coming from a southeasterly direction. Artificial breakwaters have been constructed to compensate for this deficiency.

The Pagesville facilities, however, are nestled behind a sand-spit island complex, Crow's Neck Island. It gives total protection from storms, winds, and wave action regardless of their intensity and direction (Map 3). Although the harbour is shallow and therefore limited to small craft, it is large and offers the fishermen many ideal mooring places. The physical attributes of this harbour, considered together with those of the estuary, explain, to a large extent, why the majority of fishermen in this area have always preferred to fish out of Pagesville.

Glacial action, in the shaping of the seacoast, laid the foundation upon which the contemporary landscape rests. During the formative period, the area was scoured and

The Pagesville Region



Adapted from: Department of the Environment. Marine Sciences Branch. Canadian Hydrographic Service. #4215.

a layer of pebbly moraine was deposited (Clibbon and Hamelin 1968:64). Topographically, the Pagesville peninsula is low, between fifty and sixty feet above sea level at its highest point, and predominantly flat. The extensive salt marshes located at its base indicate that at one time the peninsula was most probably an island which has become attached, through ocean depositions, to the mainland (Map 3).

The Pagesville peninsula, as well as most of coastal Nova Scotia, is classified within the general soil type called "eastern podzol zone" (Clark 1968:50; Watts 1968:100). More specifically, "the eastern podzols have developed in a zone of heavy precipitation, large water surpluses, and no or very small summer deficiencies" (Watts 1968:100). The water surpluses wash out the majority of the clay from the soil and leach out much of the iron and aluminum (Clark 1968:50). As a result, the level of acidity in the soil is high while its natural fertility is low, hence, "...it is only by judicious management that satisfactory yields are obtained" (Watts 1968:100). At best, any serious attempts at agriculture in the Pagesville area could only have been marginally successful given the existing conditions of the soil.

Furthermore, the natural vegetation on the peninsula contributes to the continuation of the podzolization of the soils. Because of its exposure to the North Atlantic winds, the peninsula only supports a forest cover of scrub conifers,

primarily balsam, firs, and red spruce, and the odd-stumped poplar and birch. The 'leaf litter' from this mixture is relatively useless in helping to reconstruct the soils. Moreover, the needles and cones of the conifers tend to raise the level of acidity in the soil.

While the climate in the area has been a bane to the establishment of agriculture, it was a boon in the development of the inshore fishery. Generally, the climate of Nova Scotia has been characterized as:

...an upper-middle-latitude east coast maritime region strongly affected by air masses moving from the west where they have been continentally conditioned. It [Nova Scotia] is situated in the heart of the area of favoured storm-tract exit from the continent and in consequence has rapid, day to day changes in temperature, humidity, and cloudiness and more than usual windiness (Clark 1968:35).

Within this general pattern, there occurs a marked seasonality in temperature, the amount of precipitation, and the number of sunlight hours.

By examining the interrelationship between the number of sunlight hours, the precipitation, and the mean temperatures recorded June through September in Table 1, the importance of climate to the development of a dry-salted fishery soon becomes apparent. As Table 1 indicates, June through September is characterized by stability in mean monthly temperatures. During this same period, the number of sunlight hours reach their maximum level and remain fairly consistent at around

TABLE 1

A SUMMARY OF MONTHLY SUNLIGHT HOURS,
MEAN TEMPERATURES (F°), PRECIPITATION
(inches) FOR BRAZIL, 1964-74

MONTH	1964			1965			1966		
	# sun hrs.	temp.	precip.	# sun hrs.	temp.	precip.	# sun hrs.	temp.	precip.
January	89.3	29.4	3.81	86.3	25.3	2.84	70.9	28.9	4.79
February	140.0	28.2	N/A	125.2	25.7	3.27	121.2	26.5	2.90
March	147.5	31.5	4.00	168.8	31.7	0.72	148.5	33.7	4.35
April	211.0	37.5	4.31	156.3	37.0	2.12	187.1	37.2	1.06
May	308.6	46.4	0.67	205.3	44.9	2.74	187.0	44.3	3.48
June	187.1	50.5	2.99	241.3	51.4	2.52	163.1	50.4	2.78
July	104.3	54.0	3.05	181.7	53.6	2.07	261.5	55.8	2.20
August	209.2	56.9	7.77	153.0	54.3	3.01	184.3	55.7	2.10
September	190.4	54.3	4.15	153.8	52.7	1.37	209.1	53.7	2.29
October	108.4	50.3	3.70	174.8	46.6	3.10	186.7	46.9	4.28
November	150.7	40.2	5.49	125.0	38.9	5.82	89.9	43.0	4.99
December	56.9	34.0	5.77	97.5	32.8	2.75	81.0	34.7	4.89

SOURCE: Department of Transport. Monthly Record: Meteorological Observations in
Canada. Meteorological Branch.

TABLE 1 (continued)

MONTH	1967			1968			1969		
	# sun hrs.	temp.	precip.	# sun hrs.	temp.	precip.	# sun hrs.	temp.	precip.
January	89.9	32.3	6.60	127.5	24.1	3.65	92.3	29.9	3.16
February	117.6	24.9	4.20	125.3	24.0	3.04	57.3	31.0	3.57
March	129.5	29.3	6.44	135.8	33.6	4.70	N/A	33.0	2.30
April	169.7	36.0	6.04	196.0	41.1	1.45	200.9	40.6	5.67
May	188.2	42.5	6.59	235.7	46.2	4.26	255.7	46.9	4.04
June	164.1	49.7	7.10	177.5	52.2	4.27	200.5	53.8	1.08
July	71.0	56.2	2.65	229.1	57.5	0.35	218.1	58.6	1.76
August	102.8	55.9	5.40	232.8	56.7	2.02	222.6	58.9	3.68
September	188.6	54.1	5.96	163.0	60.4	1.60	154.7	56.3	3.89
October	149.4	48.7	4.05	161.0	53.1	7.14	169.3	49.8	2.30
November	89.9	41.4	5.07	73.0	41.0	6.36	75.5	45.1	4.37
December	98.9	33.0	8.11	54.7	33.0	5.63	74.7	36.2	6.04

TABLE 1 (continued)

MONTH	1970		1971		1972	
	# sun hrs.	temp. precip.	# sun hrs.	temp. precip.	# sun hrs.	temp. precip.
January	116.9	21.8 2.54	87.5	24.5 4.01	62.4	29.7 4.17
February	127.7	22.7 2.64	95.6	27.3 5.58	100.8	N/A 4.38
March	161.0	32.7 3.88	149.6	33.1 4.46	108.9	32.2 4.94
April	156.8	38.5 3.27	171.4	39.8 3.34	142.2	37.2 3.44
May	219.5	47.6 2.96	147.2	50.0 4.96	214.6	45.0 5.05
June	180.0	51.9 3.56	256.3	52.2 0.26	104.3	52.2 2.73
July	176.0	56.5 1.67	214.2	57.4 2.59	183.4	57.6 1.17
August	174.6	59.2 11.04	189.5	57.3 6.23	235.3	58.0 2.17
September	136.7	55.5 3.26	171.1	56.4 0.36	170.6	57.4 3.09
October	178.2	51.3 2.06	189.5	52.7 1.93	154.6	47.6 5.93
November	128.1	43.6 4.06	113.2	41.2 6.40	98.5	39.5 8.07
December	84.9	29.6 4.78	101.7	31.2 3.68	61.2	32.8 6.50

TABLE 1 (continued)

MONTH	1973		1974	
	# sun hrs.	temp. precip.	# sun hrs.	temp. precip.
January	99.9	28.3 2.67	103.5	27.8 5.65
February	94.0	26.2 4.54	120.3	26.2 5.27
March	145.0	35.0 4.44	173.9	32.4 2.60
April	181.1	39.5 4.81	176.4	41.0 4.44
May	151.0	46.7 3.64	210.1	44.1 6.18
June	175.4	53.7 4.43	190.2	52.9 2.13
July	155.9	58.7 4.50	212.7	57.6 0.78
August	175.3	61.0 3.68	225.9	60.5 2.74
September	198.2	55.6 1.89		
October	169.1	50.5 3.64		
November	106.3	41.6 2.07		
December	89.6	38.7 5.44		

175.0 hours per month. Most important, June to September is the time of the year when average monthly precipitation is at its minimum.¹

This combination of seasonal trends was an important factor in the origin and development of the inshore fishery. As will be shown, one of the initial concerns of the first New England settlers was to establish their fishery in locations best suited for drying fish in the open air on 'flacks', i.e., raised wooden racks constructed in such a manner as to maximize the flow of air around the fish. The relation between maximum sunlight, highest temperatures, and minimum precipitation during the summer and early fall suggests that Pagesville and vicinity was one such place.

Thus far, we have seen that certain climatic and geographical factors militated against the development of agriculture while, at the same time, lent themselves to the generation and maintenance of a successful small craft inshore fishing industry. However, in any analysis of environmental factors that influence fishing, the greatest weight must be given to the physical and ecological structure of the continental shelf. From the South Shore of Nova Scotia, the continental shelf stretches for over one hundred miles out into the North Atlantic. The fishermen from Pagesville deal with just over one hundred and twenty square miles of this vast area in a zone that extends for over twelve miles from the coast out

into the ocean with a width of approximately ten miles from the southwest side of the peninsula to the northeast side of the 'Half-Moons' (Map 2).

The importance of the continental shelves to fishing "...is of course that above them [are] concentrated areas of plant and animal plankton, with successively larger forms of sea life feeding on the smaller, culminating in the world famous richness of demersal fish, above all cod" (Clark 1968;23). However, the physical structure of the ocean bottom, its topography and material make-up, i.e. sand, pebbles, and rocks, together with climatic factors and water movements like tides and currents, exerts a determining influence on the spatial distribution and seasonal occurrence of commercial marine species.²

As was reported for Cat Harbour (Faris 1972) and Sandy Cove (Firestone 1967) in Newfoundland, the Pagesville fishermen view the ocean landscape with the same amount of detail and interest as farmers do a portion of terrestrial landscape. To them the ocean bottom is a complex series of hills, valleys, levels, and 'holes', each feature having various physical and biological components which affect their access to commercially valuable fish. They use labels such as 'hard bottom' and 'shoal water' to designate both the physical make-up and topography of the ocean floor. Implicit in the labels are statements concerning the relationships between the bottom's

geo-morphological composition and categories of marine life (see Figure 1). For example, 'shoal water' refers to the shallow water over a sudden rise in the ocean floor.

Associated with 'shoal water' are kelp beds and a number of distinct marine creatures which compose the habitat preferred by the American lobster. A fisherman's degree of success, as will be shown, depends upon his knowledge of and familiarity with these relationships and conditions.

The potentialities and parameters of both the terrestrial and the marine environments have conditioned the nature of human settlement and activity on the Pagesville peninsula. Factors such as proximity to the fishing grounds, the availability of adequate harbours, and a climate that was conducive to the requirements of drying fish, played a major role in the location and the spatial distribution of communities on the landscape. History and changing market conditions have played upon this environment field in motivating settlement and the development of a commercial inshore fishery.

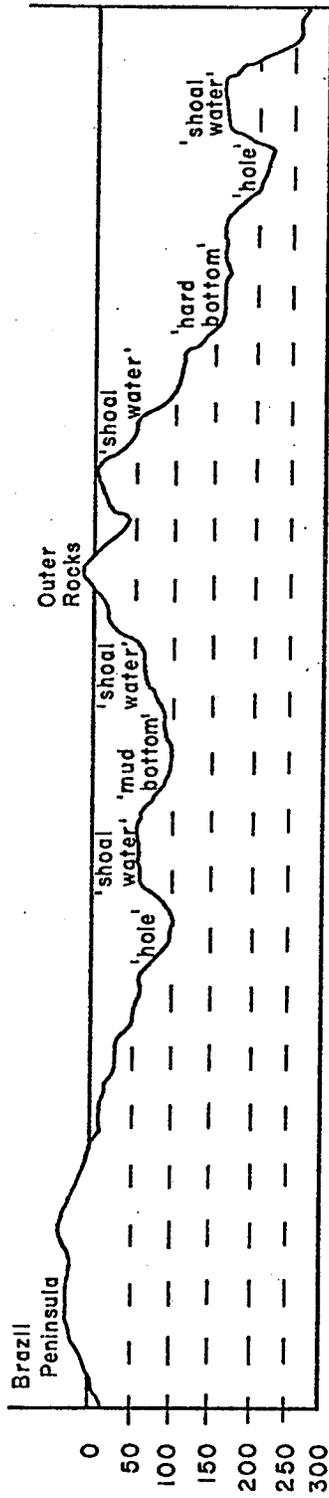
Settlement and History

Settlement

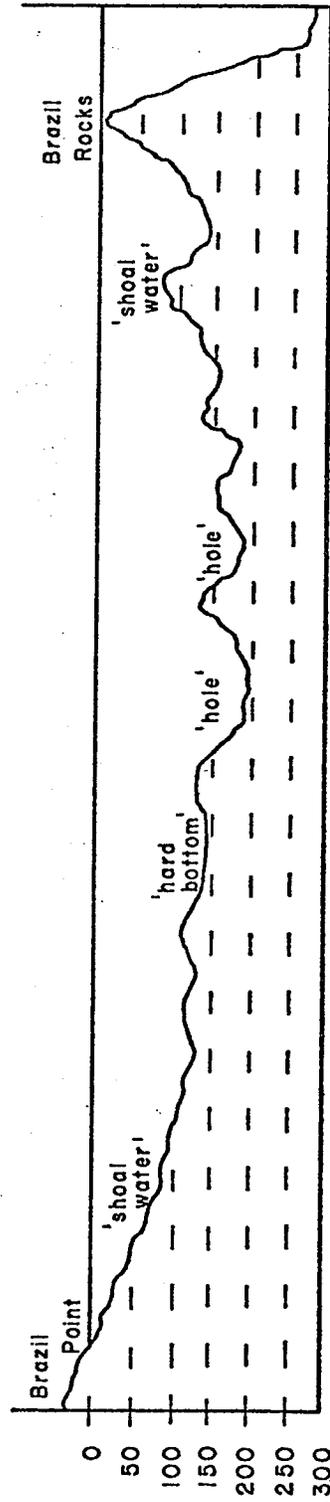
European settlement of the Pagesville area began with French colonization in 1623. After having been appointed Governor of the Port Royal colony following Jean de Biencourt's

FIGURE 1

Cross Sections of the Pagesville Ground



CROSECTION "A"



CROSECTION "B"

death, Charles de Saint-Etienne La Tour moved his base of operations to the Cape Sable area (Clark 1968:82-83). He was primarily interested in expanding his area of control in Acadia by opening up new fur trading territory. La Tour established several trading posts (margarins), such as Fort St. Louis and Fort Lameron, throughout the district (Clark 1968:90-91). However, La Tour quickly became embroiled in conflicts over the control of the fur trade and was soon ousted by his competitors (Clark 1968:111). He eventually turned to the British for assistance and "...made an arrangement to occupy and exploit the Cape Sable area" (ibid.:111).

Although the known history of the Acadian settlement at Port Lameron is sketchy, D'Entremont (1967:168) argues that it was the first major European settlement in southwestern Nova Scotia.³ Apparently, the Acadians did not do very well. Clark (1968:151) reports that "In 1684, we are told that at Port [Lameron] there were two buildings of the 'Sieurs' La Tour and Mius (D'Entremont) and six or seven people, all very poor." Shortly after arriving, the first settlers learned that the soils were not particularly suited for agriculture, and they quickly turned to fishing as their main subsistence activity. Fishing, together with garden plots for vegetables, supported the Acadians until they were forcibly expelled by the British during the Acadian Expulsion starting

in 1755. From all accounts, the British action was resisted in the Cape Sable area. Many of the Acadian settlers took to the woods and fought a guerilla war in opposing forced removal (Brebner 1937:32). However, by the summer of 1759, the Acadians had been overcome and were being held prisoners in Halifax (Murdock 1866:373). The way was now cleared for the establishment of the first permanent British settlements.

In 1761, a number of families from Nantucket and Cape Cod arrived in the area and established the community of Barrington (Mackinnon 1930:24; Map 1). They were a small portion of the pre-Loyalist migration from New England which was intended to fill the lands left vacant following the Expulsion. Although the colonial administration in Nova Scotia was primarily interested in attracting farmers to populate and work the Acadian lands in the Annapolis Valley, many fishermen from New England used the opportunity to establish bases closer to the North Atlantic continental fishing grounds (Brebner 1937:29-30). Moreover, the migration of fishermen was a product of several factors discussed below which had been impeding both the growth of the New England fishery and the development of a New England controlled trade in dried and salted cod. Economic and social conditions in New England, at that time, also stimulated this movement of people. To fully appreciate the situation and its consequences

for the Pagesville region, it is necessary to briefly review some of the historical developments which affected the North Atlantic fishery.

By the end of the seventeenth century, Britain and France had gained total control of the fishery to the exclusion of the other colonial powers such as the Spanish and the Portuguese. At the same time, "...the New England fishery had expanded to the outlying banks and to the shores of Nova Scotia. With all-the-year-around ports, earlier fishing and larger fish, New England had expanded her production and her markets" (Innis 1934;xiii). However, as Brebner (1937:10) points out:

There had been the contest between the fishery on the Banks themselves to take the catch to Europe "green" in brine and the fishery from harbours and smaller craft which improved the product and reduced its bulk by drying the split fish on shore. The dry fishery having proved in general more remunerative than the green, it became clear that the most efficient fishery was that based on ports nearest the fishing grounds if beaches and sun were available....

This posed a major problem for the New England fishermen and fish merchants. While the British possessed Newfoundland and the French occupied Cape Breton from which to operate a 'shore' fishery, the New Englanders did not have access to adequate harbours and ports in which they could 'make' (light salt and dry) their catches. Hence, they could not produce a commodity which would be competitive on the international market.

In response to this situation, the mercantile interests in New England attempted to encourage the fishermen to develop a 'shore' fishery based in northeastern, mainland Nova Scotia.

Nova Scotia entered the picture during the eighteenth century as an advanced base for the New England fisheries and as a possible rival to Newfoundland and Cape Breton curing merchantable fish. Canso was the site of a vigorous effort to emulate the French sedentary fishery at Louisburg between 1720 and 1744, but was eclipsed by her mighty rival (Brebner 1937:11).

The failure of the Canso based 'shore' fishery motivated the New English merchants to seriously consider an armed assault on Louisburg. In 1745, William Shirely, the Governor of Massachusetts, petitioned both houses of assembly for the funds and backing necessary to support such an endeavour. Initially, the plan was rejected "...but subsequently a petition from merchants of Boston, Salem, and Marblehead induced them to reconsider the subject, and the project was finally adopted on 26 January..." (Murdock 1866:47-48). The expedition was led by William Pepperell, a merchant, and the entire force was made up of New England militia rather than British regulars (ibid.:48).

The French were defeated and many New Englanders became more than willing to move to Nova Scotia and develop its potentials. Aside from its nearness to the fishing grounds, several other factors underlied the pre-Loyalist migration to Nova Scotia. A landed, privileged, and wealthy

class had arisen in New England. As a result, land and business were rapidly becoming concentrated in the hands of this group of owners. Consequently, a new landless class began to eagerly look to the frontiers for opportunities (Brebner 1937:25-26).

The fishermen and whalers were interested in the whole South Shore from Cape Sable to Canso because of its abundant harbours and its nearness to the Banks...

The Nova Scotian administration had relatively little to do with the immigrant fishermen, who promptly began what was to be their common practice of keeping out of the way of Government in the hope that Government would leave them alone. They skirted the coasts, investigating harbours, beaches, and water and timber supply. When they chose a site some of them set to work making fish stagings and flakes and either assembling or constructing the frame buildings in which they were to live, while others went off in ships or boats to gather the harvest of the seas (ibid.:29-30).

The families that established Barrington in 1761 were motivated by this series of events and pressures to settle in Nova Scotia.⁴

By July 1st, 1762, one hundred and forty-five persons had settled at Barrington (Mackinnon 1930:25). A census taken in 1770 established the population at 387 of which 383 had come from New England (Nova Scotia Department of Trade n.d.:49). Mackinnon (1930:25) notes that soon after the new settlements had been founded:

...many families had begun to remove from the limits of the first settlement at Barrington and at Liverpool to islands and lonely harbours

further away, where the shore fishing was better, and firewood more easily obtained. In this way a fishery was established at Green Harbour, on the Ragged Islands, at Port Mouton, and at the old Acadian site of Port (Lameron).

In this manner, fishing communities such as Pagesville were established all along the South Shore. Unfortunately, specific information concerning the founding and the growth of Pagesville during this period is unavailable. However, some mention is made of activities at Barrington between the years 1761 and 1779. The events and developments which affected Barrington most probably had a similar impact upon Pagesville.

The defeat of the French, while resulting in the English settlement of Nova Scotia, also revealed the vigorous competition between New English and British mercantile trading interests. As Cleaversey points out: "The policies in fashion in Britain in those days were aimed definitely at discouraging the development of a colonial carrying trade" (1973:5). Brebner (1937:10-11) notes that:

The North Atlantic fishery itself was but part of the matter in dispute. Far more important was the trade which could be built around it. During the seventeenth century Boston had become the "Mart Town" for the West Indies, and had secured a substantial share of the English capital which poured into the islands by carrying and exchanging the fish, wood-products, foodstuffs, and livestock of the north and the sugar, molasses, tropical products, and rum of the south. Trouble came when the worn out British sugar islands began to yield to French rivals, about 1700. Then New England, which

dominated the American carrying trade, broke through mercantilistic control by trading directly with the French islands and weaving an enormous fabric of marine trade, largely illegal... Attempts to put New England in her place in the British mercantilistic structure failed, as did efforts to make her help to bolster up the declining British sugar islands.

The conflict, of course, intensified over the years and eventually led to the American Revolution.

The New Englanders in Nova Scotia were very much opposed to the notion of fighting their ex-compatriots, hence, they maintained a position of neutrality throughout the conflict. This stance was particularly characteristic of the Cape Sable-Barrington area of the South Shore.⁵ However, their neutrality was not exactly passive in that they attempted to reap whatever benefits they could from the war. Many captains from the South Shore engaged in a very lucrative trade with New England which involved commodities such as fish, lumber and wood products, salt, manufactured goods, and fugitive or shipwrecked American privateermen (Brebner 1937:316). Barrington and communities in its vicinity played an important role in these transactions.

Trade went on, usually through Yarmouth or Barrington, but sometimes even with Boston directly; and hard cash circulated as seldom before when one side desperately needed some commodity like salt or flour which the other could provide...Some neighbouring places such as Port Mouton and Ragged Islands (Lockeport), were so American in sympathy as periodically to serve as advance bases for American privateers and for the disposal of their captures (ibid.:317).

As the war intensified, the volume of trade and interaction declined to a trickle. By the end of the war, tight money and the war economy were having a dramatic impact on business in Barrington and the surrounding regions.

The arrival of the "Tory" Loyalists following the American victory set Nova Scotia on a pro-British course and, subsequently, put an end to the maintenance of close ties between communities on the South Shore and New England.

In 1783 the marginal ground of Nova Scotia ceased to be an outpost of New England and became an outpost of England...the geographic limitations of the New England fishery, in view of the requirements of the prevailing tendency that the fishery was conducted with greatest efficiency from the land nearest the fishing grounds, led to the emergence of Nova Scotia as a separate unit (Innis 1934:xv).

In a very real sense, the British defeat and the subsequent settlement of Nova Scotia by the Loyalists ushered in a period of Nova Scotian dominance in the North Atlantic fishery which was to last for over one hundred years.

It is likely that some of the Loyalists settled in the Pagesville area. Family surnames such as the Browns and the Greens, which are prominent today, first appeared during this period. Pagesville is named after Nathaniel Page who, in partnership with Nathan White, established the first commercial trading firm in Lower Port Lameron, later renamed Pagesville (Crowell 1928:365). During the nineteenth century, Port Lameron and Pagesville were centres of fishing, trading,

and shipping activity. Both the 'vessel' (offshore banks) and the 'shore' (inshore) fishery were vigorously pursued.

Always the fishery business was urgently prosecuted, freighters were employed, excellent stores established and an ideal community grew up around the ruins of old fort St. Louis (Lameron) (Crowell 1928:365).

Since the establishment of the first settlements the catching, processing, and marketing of fish has always been the focal point of economic activity.

Population and Industry in the Late Nineteenth Century

Supported by Nova Scotia's dominant position in the fishery and favourable market conditions, these fishing communities grew steadily. For example, between 1870-71 and 1880-81, the population increased from 1,477 to 1,789 in the Port Lameron census sub-district which includes Pagesville and the Brazils (see Table 4). Although some fishermen were engaged in the 'vessel' fishery, a large majority of them owned and/or operated smaller boats in the 'shore' fishery (see Table 2).

Table 2

Men Employed by Type of Fishery

	Vessels	Men	Boats	Men
1870-71	12	89	187	227
1880-81	10	99	331	319

Source: Government of Canada. Census. 1870-71 - 1880-81. Occupation. Vol. 3.

The apparent shift towards the 'shore' fishery reflected in the figures for 1880-81 is, without a doubt, the result of the rise in prominence of lobstering during the preceding decade coupled with a slump in the Bank fishery. Moreover, the disproportionate ratio of boats to men recorded in 1880-81 indicates that at least a few of the vessel fishermen retained smaller craft for the purpose of lobster fishing during the federally regulated season.

Until well into the twentieth century, the way of life in Nova Scotian outports was quite similar to that reported by Faris (1972), Firestone (1967), Junek (1937), and Breton (1973) for fishing communities in Newfoundland, Labrador, and Quebec. Most families maintained small plots on which they grew vegetables, grains, and fruit for domestic consumption (see Table 3).

Table 3

Cultivated Land Compared With Total Land Occupied*

	Total Population	Total Land Occupied	Total Land Cultivated	% of the Total Occupied
1870-71	1,477	14,986	1,360	9
1880-81	1,798	9,148	1,992	20

*In Acres

Source: Government of Canada. Census. 1870-71 - 1880-81. Population and Occupation. Vols. 1 and 3.

As can be seen in Table 3, the increase in population was accompanied by a similar increase in the amount of land under cultivation. Apparently, foodstuffs cultivated on a part-time basis were an important supplement to their yearly income. By this I mean the products of part-time agricultural activities which were domestically consumed helped to provide the capital the fishermen required to cover the necessary costs of refitting and repair incurred each year in that it freed some of the income earned through fishing from domestic expenses.

Kinship and family were the focal points of local level social and economic organization. Agnatic kin links were the key principles of recruitment and crew composition. Moreover, the entire population was intimately involved in the mode of production. For example, women and children performed the vital tasks of 'making' the catch and tending to the fish as it dried on the 'flacks'.

This is not to say that these outport communities existed apart from the external society. On the contrary, the nature of outport life and organization has always been, more or less, a function of the wider economic system. Changes in the condition of the international fish market have a resounding impact on the outport settlements. Population in the Port Lameron-Pageville area began to decline rapidly after 1880-81 and this trend had continued

with a remarkable degree of consistency up until the present day (see Table 4).

Table 4

Population in the Port Lameron Census Sub-District, 1870-1971⁶

1870-71	1880-81	1890-91	1901	1911	1921	1931	1941	1971
1,477	1,798	1,049	812	758	729	663	629	586

Source: Government of Canada. Census. 1870-71 - 1941. Population. Vol. 1.

A fifty-five percent decline in population between the years 1880-81 and 1901 marked a period of dramatic change in the international economic order.

Three major developments placed an inordinate amount of pressure on the populations in places such as Port Lameron and Pagesville. During these two decades, the international market for Nova Scotian dry-salted fish collapsed. At the same time, Canadian and American urban-based industries were desperately in need of massive amounts of labour. Finally, this period marked the initiation of intensive governmental intervention in the fishery.

The nature of the exchange system operating at the local-level made the fishermen particularly vulnerable to any fluctuations in the state of the international market.

Everywhere that cod fishing was the major activity, the merchant class had tended to monopolize it by the truck system. Under this credit system the fisherman had to sell his fish to the

merchant from whom he obtained his gear and provisions, liquid and solid. The outport merchant in turn used the dried cod to pay the fish exporter of Halifax or St. John's for his imported supplies of food, drink, cordage, salt and lumber. In the absence of local competition or regular transportation and banking services, the fishermen could make no other use of his rare profits except in the merchant's store... No income to venture existed where fishing was the only industry and merchants the only source of credit (Erskine 1968:243).

In this system, the fishermen's income decreased if the international price fell. All declines in the wholesale market price were passed down from the speculators through the exporters to the outport merchants who, in turn, gave lower prices for dried-salt fish. On the other hand, the price that the fishermen received during periods of high prices on the international market remained remarkably stable. Moreover, the nature of the credit system, i.e., supplies and gear needed for the spring outfit were charged against the summer and fall catch, placed the fishermen in a constant state of debt. Of course, the maintenance of this pattern was in the outport merchant's interest in that it tied the fishermen to him.

Following 1886, the Nova Scotian dried fish industry suffered several major setbacks. In particular, the Treaty of Washington, a trade agreement between Canada and the United States which had initiated reciprocity in fish and fish products, was terminated in the fall of 1885. As a result:

...a duty of eighty-four cents a quintal was imposed on Canadian cod, and exports of dried fish declined from 195,666 hundredweight, valued at \$641,611 in that year, to 153,271 hundredweight, valued at \$406,392 in 1886 - approximately 21 percent in quantity and 40 percent in value (Grant 1934:20).

In effect, this development coupled with the competitive problems that Nova Scotian dried cod was experiencing on the international market destroyed the Nova Scotian dried fish industry, the fishery that the Port Lameron-Pageville area was committed to.

Although, by 1886, transportation and refrigeration technology had advanced to a point where fresh fish could be shipped profitably, the industry was not well established until 1905 because the network of rail lines had yet to reach the more isolated areas of the province (Grant 1934:83ff.). If the collapse had come ten years later, the development of the fresh fish industry and the rise of lobstering might have offered the fishermen an alternative and economically viable means of compensating for the declining value of dried fish.

The Rise of Lobstering

During the late 1860's, the fishermen on the South Shore had started capturing lobster for sale to local canning companies which were owned and operated by large fish exporting concerns (Swim n.d.:34). Initially, all lobster was marketed shelled and in cans because the available means of transportation,

i.e., sailing vessels, were too slow and uncertain for the marketing of live lobster. The rise of lobstering and the canning industry had a significant economic impact on the outport fishing communities. Swim (n.d.:34) notes that in Clarke's Harbour on Cape Sable Island the capturing and canning of lobster employed over forty men and boys and up to sixty women and girls. Soon, the income from lobstering began to rival that earned from fishing. In Clarke's Harbour "the price paid at first was 45 cents per 100 lbs. and this gradually increased until 1880 when it was 68 cents per 100 lbs." (ibid.:35). By 1900, the fishermen on the South Shore were earning more from lobstering than from dried cod (Erskine 1968:264).

Two developments, however, had changed the nature of the lobster industry by this time. In the areas south of Halifax, the advent of steam powered ships during the 1880's gave birth to the export of live lobsters and, at the same time, destroyed the canning industry. Although helping to raise the price that the fishermen received (the buyer's overhead was dramatically decreased), this innovation in transportation eliminated the important role that women's labour had played in the production process, thus eradicating a potentially key source of income from the fishermen's domestic economy, that is, the wage earned by the women. From this time on, the labour of women was to perform an ever decreasing role in

production.

Secondly, the adoption of a number of technological innovations such as the gasoline engine and the lobster pot enabled the fishermen to significantly increase production. This is well illustrated in a newspaper article from The Halifax Herald.

...it is doubtful if there are many people anywhere better posted on the growth of the industry than is John C. Smith, of Lower Clarke's Harbour, one of the oldest fishermen on the island in active service. He has been fishing almost sixty years and recalls that when he first went to work the catching of lobsters was only to be indulged in at spare moments, when not otherwise engaged in other branches of the fisheries. Saturday afternoon, after the week's work was done, was a favorite time to catch lobsters and they were always caught by "gaffing" or by netted hops... the mode of catching them was to tie several bundles of cod heads, let them hang in the water and then go up and down the channel picking off the big ones (the little ones were not touched) with gaffs...Traps were unknown then. All of fifty years ago the first trap ever seen on the island came ashore in a gale on the South Side Beach, and was picked up by Richard Nickerson. Neither Mr. Nickerson nor anyone else that saw it had any idea what it was but after a great deal of deliberation they at last came to the conclusion that it was a salmon trap of some kind, intended to be set in narrow streams.

...It was not until after the Portland Packing Company started operations about forty years ago, that the first trap was built on the island. Mr. Smith says it was thirty-eight years ago that he was one day on the wharf of that company when he saw Mr. Pallet, then employed by them, building a cage-like contrivance of laths. It was rumoured that it was to be a lobster trap, and during the day about every fisherman around found some excuse to visit the wharf and look at it. A few thought it would be alright, but

the majority scoffed. However, the trap was finished and thrown off the head of the wharf. Next morning it was hauled up and several lobsters were found in it. It worked - that was all the Cape Island men wanted to know. In a few days every man who could do so was buying laths - and they have been doing so ever since (Halifax Herald, December 15, 1910).

Aside from the interesting 'origin of the lobster pot myth', this passage reveals much concerning the forces which motivated change in the means of production. The fact that the first man to build a trap was a 'local' who worked for the canning company is no coincidence. With the introduction of the pot, lobstering was transformed from a leisurely, low-investment activity to a capital and labour intensive industry. Without a doubt, the fishermen's earnings increased with the adoption of the lobster trap, but so too did their degree of investment and commitment. On the other hand, the buyer, as the result of the 'introduction and motivation' process, was guaranteed a reliable and high volume mode of production which would maximize his access to live lobster at no additional cost. As a matter of fact, the merchant reaped a two-fold benefit from this change. He lowered the costs of handling and processing while at the same time capturing a good portion of the increased price received by the fishermen. The merchant held a monopoly on many of the parts needed by the fishermen to construct the lobster pots. It was the fishermen who had to invest their money and time

in building and setting the pots, not the buyer. Within this context, then, it is not surprising that an employee of the canning company was the first person to build a trap in Clarke's Harbour.

The fishermen's earnings from lobstering did gradually become a vital portion of their yearly income. As a result of the collapse of the dried fish market, more and more fishermen turned to lobstering. But the intensity of the fishery soon decimated the available populations of lobster and it was not long after this that lobstering became a regulated seasonal activity. By 1886, the federal government had introduced fishery regulations which only permitted lobstering on the South Shore between January 1st and July 15th. This policy restricted the fishermen to three months of actual lobstering because the water is too cold, the sea is too high, and storms are too frequent during January, February and March for them to leave port. By 1898, their season had been further limited to the period between December 15th and May 15th (Report of the Canadian Lobster Commission 1898:29).

The Impact of Economic Change

With a collapsing dried-fish market, a restricted lobster season, and a poorly developed fresh fish industry, many of the younger fishermen and their families, caught in the debt-credit maze of the 'truck system', had no alternative

but to look for work outside of the outport. Coincidentally, labour was a 'sought-after' commodity at this time for the industries located in rapidly growing urban centres.

Demand for labour in the coal-mines, the iron and steel industry, the lumber industry, the construction of railways and other activities in the Province, attracted men from the fisheries, but it was of minor importance compared with the high wages paid in the industrial centres of New England (Grant 1934:26).

The depopulation of the Pagesville-Port Lameron area, as well as most of rural Nova Scotia, can be attributed to these processes. Beside regulating the lobster fishery, the federal government introduced several boat construction subsidy programmes in order to attempt to assist the fishing industry. However, these policies tended to stimulate the construction of larger vessels instead of providing relief for the hard-pressed inshore fishermen (Grant 1934:19).

This period marks a transition point in the development of the Canadian Atlantic fishery. Accompanying the depopulation of rural communities are the beginnings of a movement, stimulated by the government and industry, towards a capital, as opposed to labour, intensive fishery.

The fishermen who remained on the South Shore compensated for these changes by adopting gasoline engines for their boats. Eventually, the now familiar 'Cape Island' boat appeared.

It was Ephram Atkinson who started a boat shop here (Clarke's Harbour, Cape Sable Island) in 1905 who was the originator of this style. It happened at a time when the first engines were in the locality. Up until then, most of the boats were all open hulls without cabins.

The fishermen asked for improvements and some protection from the weather. Gradually it evolved to the present type with a small cuddy forward and wheel house.

Most of the boats are 38 feet long and used both for lobstering and handlining. They use oak keels, hatmatack timbers, and pine plank. While hatmatack isn't a hard wood, its (sic) one of the toughest woods available. Using galvanised nails, many of these boats are still taking a beating after 20 or more years (Halifax Chronicle Herald, May 2, 1959:5).

The 'Cape Island' fishing boat was designed in such a manner as to provide the fishermen with as much durability and working space as was possible. Better still, from the fishermen's point of view, was the cost. Since the boats were built of local materials by local craftsmen, their price was within the range of the income of most fishermen. Those men who could not initially afford a new boat only had to wait a few years until secondhand craft became available. This is the manner in which most of the young fishermen came to buy their first Cape Island boats. For example, in Pagesville, John Brown, who started fishing in the early 1920's, spent a total of eight years 'going' with his father and later with a friend before he had saved enough money to buy a secondhand boat.

The adoption of the gasoline engine provided the fishermen with a degree of mobility that permitted them to cover a much larger area of the ocean. This was a particularly important feature for the handline fishermen because they were now able to move quickly from 'spot' to 'spot'. Also, the Cape Island boat allowed the fishermen to more fully exploit the available lobster populations. With a motor powered boat, they could transport and set a larger number of lobster pots (Swim n.d.:38). The timely development of the Cape Island fishing boat enabled the remaining fishing population to adjust to the changing conditions in the external market by diversifying and increasing production.

Although the market for fresh fish rapidly expanded after 1905, the Pagesville-Port Lameron fishermen remained committed to producing dried fish and lobster. Apparently, most of the fishermen owned and maintained individual or family controlled wharves and stages up until the introduction in 1928 of federal government standards regulating the quality of the finished dried and/or salted fish product. The federal government, in an attempt to support the faltering position of Atlantic dried fish on the international market, took this action in response to the complaints from the buyers and exporters concerning the lack of uniform quality in the various grades of dried cod (Grant 1934:73).

In 1928 established standards of size and quality for dry and salted cod, haddock, hake, cusk, and pollock had been worked out, and these have been incorporated in the Fish Inspection Act. New regulations were passed by order-in-council (1929) governing the materials to be used in the manufacture of containers, and in the inspection of the containers, and the quality and quantity of the fish packed (ibid.:130).

In effect, these regulations totally removed control of processing from the hands of the fishermen and gave it to the buyers since very few fishermen had sufficient surplus capital to cover the costs of conforming to the new standards. The fishermen were finally relegated to the role of primary producers and their control of the product was restricted to 'from the water to the wharf'. After 1928, private wharves and staging facilities were no longer necessary. Either company, as in Pagesville, or government, as in Port Lameron, owned and maintained dock facilities appeared in their place. The fishermen now dealt solely with fresh fish which they unloaded after a day's fishing at the common dock.

Equally important was the impact that these changes had on the function of women in the fishery. The labour of women was the major component in 'making' the catch. With the introduction of the standards regulations, their role was completely eliminated from the production process. Women became relegated to the more subservient and dependent positions of housewife and part-time keeper of the garden. Needless to say, the alienation of women from the production

process altered the entire order of social and economic relations between men and women in outport communities such as Pagesville. Today, there is only one female engaged in the fishery in the Pagesville-Port Lameron area and she is considered aberrant by the working males.

Apart from the introduction of electronic technology, i.e., radar and echo sounders, the inshore fishermen's mode of production has remained basically unchanged since the early 1930's. A combination of fluctuating prices, the advent of mass communication, the development of easy access to provincial, national, and international transportation systems, and the increasing involvement of government in the drive to switch from a labour to a capital intensive fishery have led to the continued depopulation of small communities such as Pagesville. As we will see in Chapter 4, the out-migration of men has had an adverse effect on crew composition and the effective utilization of some fishing technologies.

This rather lengthy summary of the historical factors that moulded the conditions existing in Pagesville today is necessary to an understanding of the nature of the contemporary organization of production and market relations. Furthermore, history provides the best illustrations of the 'fit' between local-level phenomena and the external system. Producers such as the Pagesville fishermen have always been, and still are, at the mercy of fluctuations in market conditions and

governmental opinions. Indeed, historically, external conditions have played a major role in the evolution of the inshore fishermen's mode of production.

Setting

Pagesville is situated at about the centre of a peninsula that juts out into the North Atlantic, the tip of which is the most southerly point in the province (Map 2). Most of the settlement is concentrated on the northeastern side of the peninsula. Upper Port Lameron occupies a position at the peninsula's base while the balance of the communities, Port Lameron, Pagesville, Brazil, and East Brazil, are stretched out along a paved winding road that follows the coast to an armed forces base (Canadian Forces Base, Barrington) perched on the tip at land's end. At this point, the road turns up the coast and services West Brazil; the only community located on the southwest side of the peninsula (Map 3).

As of 1971, the respective populations of these communities were: Port Lameron - 156; Pagesville - 72; Brazil - 82; East Brazil - 90; and West Brazil - 186.⁷ Buildings such as stores, churches, processing firms, post offices, and dock facilities which usually serve to identify the distinctiveness and independence of a community are not

distributed evenly among these settlements. In some cases these facilities do not function to indicate the 'distinctiveness' of several of the communities. This is particularly evident in Pagesville and the Brazils.

In West Brazil, there is a store, post office, small processing firm, and dock facilities. East Brazil does not contain any of these specialized activities while Brazil contains a store, post office, community centre and a church. Most of the men in these three communities either fish out of the Pagesville harbour or work for the fish buying firm that is located there. The fish company in West Brazil buys fish from the processing firm located in Port Lameron rather than directly from the fishermen. It specializes in pickled fish and only employs the family that owns it. In the summer of 1974 it was rumoured that the company was close to bankruptcy and would soon be shutting down. At the same time, the fishermen consider the West Brazil dock facilities to be unsafe and inadequate. The wharf and sheds are in a general state of disrepair while the break-water does not offer many safe mooring places. Currently, three boats fish out of West Brazil and the catches are sold directly to the Port Lameron fish firm.

Pagesville, although the smallest of the settlements, is a hub of fishing activity. The reason for this lies in the fact that the community was built around the only good

natural harbour on the peninsula. The harbour gives more than adequate protection from storms while offering the fishermen a large number of good mooring places to choose from. During the past summer, twenty-five boats, including three offshore longliners, fished out of Pagesville. Moreover, the fish buying/processing firm located in Pagesville employed most of the non-fishing males from both Pagesville and the Brazils.

As a local centre of fishing activity, the Pagesville-Brazils area can be clearly differentiated from Port Lameron and Upper Port Lameron. With few exceptions, all of the men from the Pagesville-Brazils communities who participate in some aspect of the fishery either work out of or at the Pagesville facilities. On the other hand, Port Lameron and Upper Port Lameron are individually distinct centres of fishing and fish processing. Both of these communities contain churches, stores, garages, post offices, fish firms, and dock facilities. Most of the men work in or out of the facilities based in their respective communities. Ten boats, including two offshore longliners, fish out of Port Lameron, while approximately twelve boats are based in Upper Port Lameron.

Because of fishing and employment in fish processing, Pagesville and the Brazils may be considered to be one centre which is clearly distinguishable from Port Lameron and Upper Port Lameron. Moreover, the fishermen themselves

claim an affiliation with their respective ports on the basis of traditional and historical ties. Fishermen from one family have fished out of the same port in many cases. Thus, in addition to the synchronic view of local-level activity, the distinctiveness of these three centres is defined by the fishermen on grounds of generations of family affiliation.

Summary

In this chapter, we have seen that the articulation of critical environmental characteristics and historic events affecting economic relations motivated settlement and the development of the inshore fishery in the Pagesville region. Changes in external market conditions, while initiating out-migration, were adjusted to by the fishermen through the adoption of lobstering and the gasoline powered, Cape Island fishing boat. As a result, they were able to increase returns for work efforts by diversifying production and expanding their physical area of exploitation.

The role of women's labour in production was eliminated by the late 1920's with the introduction of federal standards for the processed product. Moreover, the fishermen's control of the fish product was reduced to 'from the water to the wharf'. The organization of production and market relations in contemporary Pagesville is the product of these forces and events.

CHAPTER 3

TECHNOLOGY AND THE ECOLOGY OF FISHING

The Pagesville fishermen are concerned with the structure of the marine ecosystem insofar as it conditions their access to commercially valuable species of fish. In this chapter, the nature of the fishermen's interaction with the marine environment, as it effects successful production and the minimization of risk, is described and analyzed. An emphasis is placed on the use of technological strategies adapted to the requirements of effective production, the fishermen's perception of the marine environment as the ecological basis of contemporary work patterns, and the notion of territoriality as it affects the spatial distribution of production endeavours.

Twenty-five boats fished out of the Pagesville harbour during the summer of 1974. Of these, three were offshore longliners with a total crew of eight; four were outboards used by five men; and the remaining eighteen, worked by twenty-eight men, were Cape Island fishing boats. With the exception of the men on the offshore longliners, the Pagesville fishermen only work the inshore grounds during the year. Of the twenty-two boats engaged in the inshore fishery, four were used for inshore longlining, seventeen were used by handliners,

and one outboard was used by two part-time fishermen for setting fleets of gill (drift) nets. Twenty of the boats are used for lobstering on a full-time basis during both the spring and fall seasons. The three offshore boats continue longlining during the lobster season and the owners of the two remaining inshore boats do not fish for lobster.

The image portrayed here is one of twenty-five boats and forty-three fishermen engaged, on a full-time basis, in every aspect of the fishery. Fishing is their only occupation and their sole source of income. The year for these men is divided into four major segments: (1) spring lobstering, (2) summer and early fall fishing, (3) fall lobstering, and (4) the winter during which their boats are 'hauled up', that is, out of the water. Each one of the 'seasons' is characterized by a particular set of activities and economic strategies. Production is organized in such a manner as to allow the fishermen to maximize their returns for productive efforts.

Technology

North Atlantic fishing has been characterized as both a hunting (Anderson and Wadel 1972:153ff) and a harvesting (Faris 1973; Goodland 1972) activity. Basically, the appropriateness of either of these labels in describing the mode of production hinges upon the attributes of the technological means of production. Bottemmanne (1959) makes a distinction

between "passive fishing devices," such as fixed traps and nets, and "active fishing devices," which include baited hooks, longline, and mobile traps, i.e., otter trawl, seines, etc. Needless to say, technologies are designed and created with use in mind. In other words, the most successful fishing technologies will be those that, given the particular situation, were adopted, adapted, and/or developed to fit the social and environmental constraints on production such as the availability of labour and the behaviour of the desired species.

For example, the Newfoundland cod trap is designed to be set in areas where the sea bottom is relatively flat and characterized by a sandy or gravelly composition, the conditions in which capelin, a small smelt-like fish, spawn. As the shoals of cod pursue capelin inshore during the summer, the trap catches a large number with a high degree of efficiency (Firestone 1967:89ff.). Moreover, as Faris (1972) and Firestone (1967) have indicated, the cod trap is ideally suited to the availability of labour in the Newfoundland outport. Its origin and success can only be explained in terms of a negotiation between social constraints and the necessity of minimizing subsistence risk within a particular environmental context. A material means of production is developed as an adaptation to the requirements and context of production. Passive fishing devices, such as the cod trap, are adapted to and exploit the seasonal or cyclical occurrence of a marine resource. This type of fishing can be considered

a harvesting activity.

Much the same argument can be used for "active fishing devices." Success with active devices is dependent upon the combination of lures, i.e. bait, and mobility with a necessary familiarity with the marine ecology and an understanding of species behaviour. The fishermen seek out those locations in the marine environment best suited to the feeding behaviour of the desired species. Although the fishermen using an 'active' technology also exploit the seasonal occurrence of marketable fish, their success pivots on the necessity of first locating the fish; hence, the appropriateness of characterizing this kind of fishing as a 'hunting' activity.

Fishermen select and/or develop a technology or combination of technologies which offer the best chances of success. In regard to the Nova Scotian inshore fishermen, seasonality, natural in terms of the weather and the occurrence of fish and artificial in terms of government regulations, is a consideration which they have had to deal with in the selection and use of the material means of production. In response to social, environmental, economic, and seasonal constraints, the Pagesville fishermen have adopted a multi-strategic approach to production, including the combination of active and passive fishing technologies.

Fishing Technologies

Their main fish catching technologies are gill nets

(drift nets), handlines, longlines, and 'the jig'. However, two technological approaches dominate production: longlining and handlining. A fisherman's commitment to either one of the methods means that he participates in a daily cycle of activities quite different from that characterizing the fishermen using the other method. Furthermore, commitment to a particular method involves varying amounts of capital investment in terms of money and labour while also affecting the manner in which specific technologies can be combined in attempting to maximize returns.

The use of gill nets is the most obvious indication of these patterns. Most of the handline fishermen usually set two nets. The nets are made of cotton and/or nylon twine and have mesh sizes which range between one and two square inches. Each net is approximately forty feet long and twenty feet wide. When set, one end is held stationary by a grapelin anchor caught on the sea bottom while the other end, marked with a bright (usually orange) buoy, is left free so that the net can swing with the tides. The net's top-rope is held at sea-level by a series of evenly spaced cork buoys. Its bottom, however, is weighted down by a number of twine bags filled with small stones. In this manner, the nets are 'hung' in the water and held stationary while they 'drift' with the tides.

The main purpose of the gill net in this situation is to provide the handliner with a daily supply of herring

(Clupea harengus) which he uses as bait to catch demersal fish such as cod (Gadus morhua L.), and pollock (Pollachius pollachius). The first thing that the fisherman does every 'fishing day' is check his nets. He slowly approaches the 'free' side of the net and 'gaffs' the buoy rope. The boat's motor is shut off and the net is then pulled into the boat from either one of the sides or over the stern. If some fish have been caught, they are 'plucked' from the net. All of the herring are put in the bait boxes. Any mackerel (Scomber scombrus) is put in a separate place and everything else is thrown back into the water. After the net is in and plucked, the fisherman starts his motor and, as he slowly moves away, the net is carefully fed back into the water. If he has not obtained any bait, this process is marked by a pronounced degree of speculation concerning the worth of his nets, the weather, the 'place' where the nets are set, and the dubious nature of herring. The fishermen with nets 'off' check them every day including Sundays and on those occasions when they cannot go fishing because of the weather. Any herring or mackerel caught in the nets on non-fishing days are sold to the fish firm. On occasion, the gill nets provide the fishermen with an alternate source of income during periods of bad weather and inactivity.

The handliner will go directly to the 'grounds' if he has bait. However, empty nets mean that he must either obtain fresh bait from another fisherman or return to port

and purchase frozen bait, usually mackeral, from the fish buyer. Both of these alternatives involve an important loss of time which, at best, usually means that he will not be able to fish the 'spot' he had originally intended to try. At worst, he will lose up to one and one-half hours of fishing and will be forced to go after haddock with frozen bait.

Basically, handlining involves the use of one or more 200 lb. nylon test lines. Approximately one hundred and seventy feet of this line is wound around a make-shift H-frame. One hook is located at the end of the line, approximately three feet below a between one and one-half pound lead weight. Above the lead weight, there is usually attached one or two 'leader lines' with additional hooks. Each one of the hooks is baited with either fresh herring ('a side and a belly') or frozen mackeral. As the baited line travels to the bottom, the fishermen prepare another handline, having it over the side before the first one hits the bottom. The handliners alternate between the lines during the balance of the fishing day: pulling one line up, taking the fish off, rebaiting, and putting it back over after they have completed doing the same thing with another line. After the lead hits the bottom, the line is drawn back two or three arm-lengths 'to put the hook where the fish are'. It is then 'sawed' back and forth in a regular motion for a couple of minutes. The handliner will then pause and 'feel for fish' before he turns and tends to his other lines. Each line is worked by hand and dealt with individually, thus, the label

handlining.

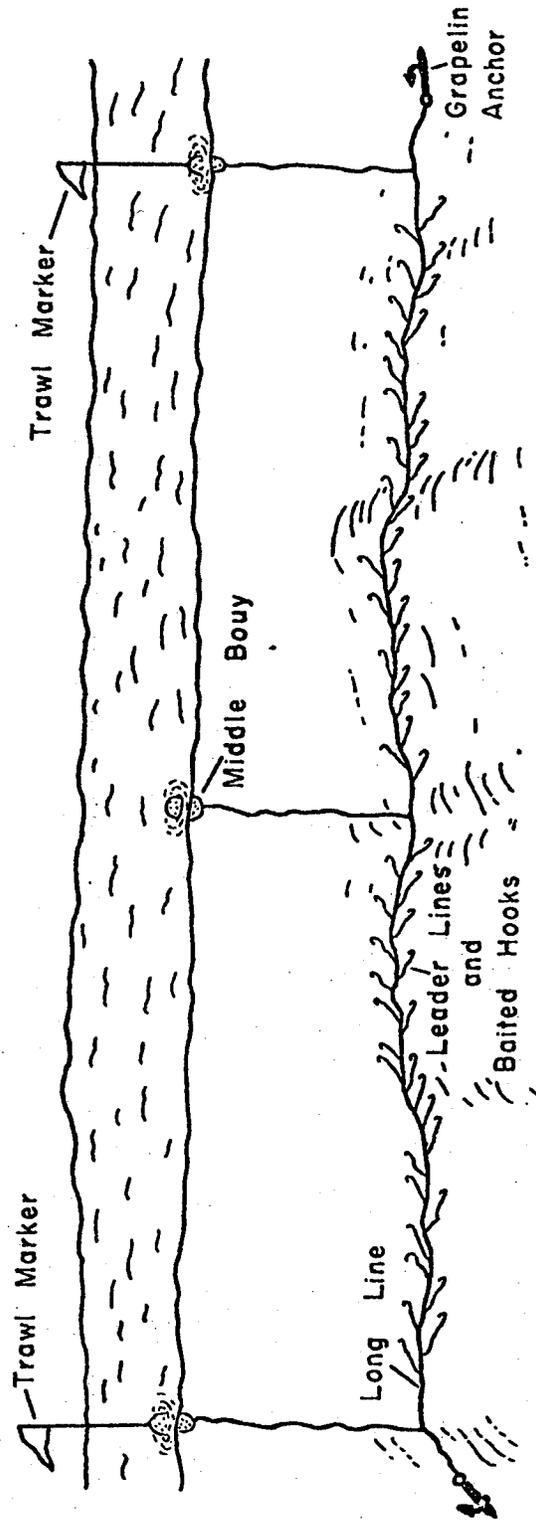
Longlining, sometimes called trawling, involves a totally different technology and organization of time and labour. With only a few exceptions, longliners do not set gill nets because they use frozen bait. A longline itself is composed of a long, heavy gauge, cotton/nylon line from which four to six hundred three-foot 'leader lines' are suspended. The hooks at the end of the leaders are baited 'onshore' with frozen mackerel during the afternoon preceeding a fishing day. The baited longline is coiled into 'tubs' (somewhat similar to a barrel that has been cut in half) and stored in a freezer until the morning.

At around three o'clock in the morning, the inshore longliners leave port. Between two and four tubs of longline are set before dawn on each fishing day. When setting, the fishermen start by releasing a lead anchor and marker buoy ('high-flyer'). The first tub of line is attached to the same rope as the anchor. Each tub is then fed out in sequence. A brightly coloured plastic buoy is attached to the trawl at about its mid-point. As they reach the end of the final tub, the fishermen attach another anchor and marker buoy. These are set after the last of the line has entered the water. In all, four tubs of trawl stretch over approximately one and one-half miles of ocean bottom when they are set in a 'fleet' (see Figure 2).

The longline is 'fed' into the water by a fisherman

FIGURE 2

A 'Fleet' of Longline



who 'leads' it with a two foot, rounded stick. He stands behind the tub feeding the line with a semi-circular arm motion, catching the heavy gauge cord with the stick at about the mid-point between two 'leaders'. He next tosses the heavy line and leaders away from the boat and into the water to avoid tangles by spreading the baited leader lines before they hit the water. This entire operation requires considerable agility and alertness since the line usually feeds out at approximately six feet per second.

A few of the inshore longliners are now using automatic trawl feeders. In this technique, the line is fed into the water through a trough-like metal device that hangs over the stern of the boat. The forward motion of the boat is used as the 'setting force'. Although this method takes less time and allows the line to fish for a somewhat longer period, most of the inshore longliners prefer to use the traditional hand-directed approach. Al Green, who has been longlining for over twenty years, stated that he does not use his automatic feeder because:

You get a more mixed up and confused trawl that way. By handling it in the old way, by hand and stick, you can control the feed of the line, make sure the hook is baited before it enters the water, and you can clear any problems.

To retrieve the longline, the fishermen return to the end which they first set and 'gaff' the marker buoy. The buoy and anchor are brought on board before the line is

wound around the engine-powered 'hauler'. As it comes in the hooks are cleared of fish and all remaining bait and the line is carefully recoiled back into the tubs. These are then set aside to be re-baited when the fishermen return to shore. It takes between one and one and one-half hours to retrieve each tub that has been set.

At the present time, 'jigging' is only pursued on a haphazard and temporary basis. This method of fishing involves the use of an unbaited double-hooked, fish-shaped lead 'jig' which is attached to the end of an unleaded 200 lb. nylon test line. Interestingly, it appears as if 'jigging' is pursued more rigorously by longliners than handliners. After setting their trawl, the longline fishermen do some 'jigging'. As much as one hundred pounds of fish may be landed this way in a little over an hour. The longliners jig to maximize daily production, to get an indication of the relative abundance and 'hunger' of the fish, and to help pass the time while waiting to haul the trawl. Handliners will only use the jig on a serious basis if they are short of bait and the fish are biting. As John Brown, who has been handlining for over forty years, told me, "The only time jigging is worth the effort is when you are in a place where the fish are taking after bait."

Electronic instrumentation was introduced to inshore fishing after the Second World War. In Pagesville, only offshore and inshore longliners use devices such as radar

and echo sounders. The sounders have had a particularly strong impact because they give the fishermen three precise measurements: (1) the depth of the water, (2) the topographic features of the ocean floor, and (3) the bottom's physical composition, i.e., either 'soft' (primarily sand and/or mud) or 'hard' (primarily rock). This instrument has enabled the fishermen to pinpoint the best 'spots' as well as locate 'new grounds' that are within their range of travel. Without a doubt, the acceptance and use of electronic technology has taken some of the guess work and chance out of longlining.

The only supportive technology used by handliners is the compass. Moreover, they feel that the use of electronic gear by the longliners has had a negative effect on the fishery. As one fisherman told me:

Before the sounders came in, there were always places that we didn't know about or fish. The fish there were left alone. Now, all of these places are known and fished. It's the longliners that are fishing them. At one time they stayed further off. Now, they've come in and are fishing places that have always been used by handliners.

Part of the explanation for this antagonism lies in the declining populations of commercial fish. Over the last twenty years, the handliners and longliners have had an increasing amount of difficulty realizing good catches. The pressure on resources would initially have a greater impact upon the longline fishermen because they have a greater amount of capital invested in their equipment. They have to

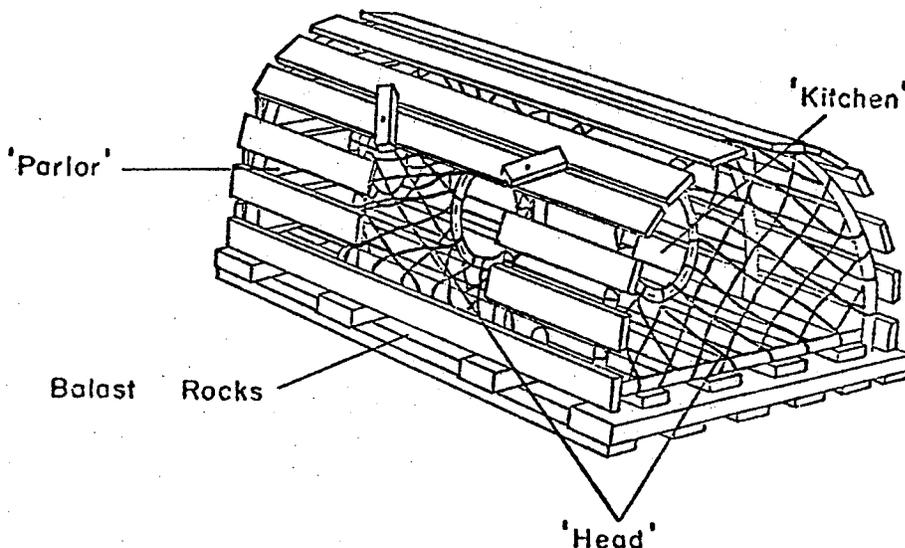
produce a greater quantity of fish over a shorter period of time than do the handliners. Apparently, the inshore longliners have moved into some of the ground traditionally used by handliners in response to these pressures.

Lobstering Technology

Lobstering is not marked by oppositions of this type since all of the fishermen use the same technology and, relatively speaking, are in the same economic position. The familiar lobster trap or 'pot' is the universal technological means of catching lobster (Homarus americanus) (see Figure 3). It has also been designated the only legal means to catch lobster in Canada.

FIGURE 3

The Lobster Pot



Source: Department of the Environment. 1973. Fisheries Fact Sheets. Ottawa: Queen's Printer.

These [pots] are usually in the form of a half cylinder $2\frac{1}{2}$ to four feet long with wood frames covered with wood laths and netting. Most of the traps are divided into two compartments, the "kitchen" where fresh or salt bait such as herring or mackerel is placed, and the "parlour" from which escape is difficult. One to three funnel-like mesh entrances (called 'heads') lead into the kitchen and another from the kitchen to the parlour. To make the traps sink and hold position, they are weighted with flat stones or concrete (Wilder 1973:6).

This description closely fits the design of the pots used by the Pagesville fishermen. Each pot is set individually and marked by a buoy. The fishermen label each buoy with their particular colour and design code. In this manner, they are able to locate their pots in the multitude that pepper the 'good spots'.

Pagesville is located within lobstering district No. 4. Their season opens on the last Monday in November and closes the following June 1st. The fishermen in the Pagesville area are permitted to fish a maximum of 250 registered pots (Government of Canada, Fisheries Act: Lobster Fishery Regulations, The Canada Gazette, 1963, Vol. 97, pp. 567-574). As mentioned earlier, twenty of the twenty-five boats that go from the Pagesville harbor are used for lobstering. Each one of the boats is registered with a 'Class A' lobster licence which means that the boat owners are permitted to fish between seventy-five and two hundred and fifty pots. The number of Class A and Class B (seventy-five pots or less) licences in each district is regulated and

frozen at a specific limit. They are usually passed from father to son as a vital part of inheritance. Those fishermen whose fathers either did not hold a licence or did not pass it on to them are forced to try and purchase one at a grossly inflated price. As one young longline fisherman from Port Lameron asserts:

I had to pay \$400 for a licence that normally costs \$7.00. The thing that gets me is that the price has been forced up by men who do not fish for their livelihood but get a licence so they can go during the season. This means that boys whose families have been fishing out of here for a long-time and who depend on fishing for their livelihood can't go lobstering.

The Advantages of Current Technological Approaches

The fishermen from Pagesville harbour use a combination of both active/active and active/passive technologies in attempting to minimize risk and maximize production. Handliners use the 'passive' gill net to provide their 'active' hook with bait. At the same time, gill nets offer the handline fishermen a potential source of income for those days during which the weather and/or occurrence/distribution of marketable species forces them to stay in port. On the other hand, the inshore longliners combine the active technologies of trawling and 'jigging' in order to obtain the highest returns for their investments of capital and labour.

These two methods of inshore fishing place different

requirements and pressures on the fishermen using them. To begin with, the levels of capital and labour investment are much higher for longlining than for handlining. At the same time, the longliner has a greater degree of technological flexibility in deciding what strategy to adopt. By this I mean, if 'fish are scarce', the longline fishermen have the alternative of setting a couple of gill nets and switching to handlining until conditions change. However, the level of the longliners initial capital investment, i.e., larger boat, electronic instruments, and the trawl, usually means that he cannot financially carry many 'poor days'.

The handliners, on the other hand, stand a much better chance of surviving the 'poor days'. They have the advantage of mobility in that they can move from spot to spot trying to maximize their daily catches while the longliner is restricted to the area where he has set his trawl. In this manner, the handliners minimize the possibilities of having 'poor days'. Longliners sacrifice security for the potential of larger catches and greater profits while handliners attempt to minimize chance and maintain a consistent level of productivity.

Regardless of the attributes of a technology, successful fishing ultimately depends upon the effective use of each of the means of production. This, in turn, is realized through the articulation of social and environmental factors.

In other words, a combination of the availability of the labour necessary to effectively use a technology, the thoroughness of a man's knowledge of the marine environment in terms of making decisions about where to fish, and the fisherman's access to information concerning which fishermen are catching fish, what they are catching, where they are catching them, and how much fish they are landing controls the success a fisherman will have in using any particular technology or combination of technologies.

The Ecology of Inshore Fishing

As the Pagesville fishermen recognize, the effective and successful use of each of their technologies is dependent, to a large extent, upon a 'functional' understanding of the marine environment and its ecology. Although this holds true in all fishing endeavours, it is particularly applicable to the organization of production prevalent among inshore fishermen throughout the world. For example, Forman (1970) in reference to the Brazilian raft-fishermen, Faris (1972) in his study of a Newfoundland outport fishing community, Firth (1966) in dealing with production and marketing in several Malaysian fishing villages and Nietschmann (1973) in discussing the subsistence ecology of the Miskito turtlemen, have emphasized the role that the fishermen's understanding of marine ecology plays in the organization of daily

and seasonal production. Consistent with these positions, I found that the Pagesville fishermen place a great deal of weight on the importance of 'knowing about fish' in striving for 'a good day's work'. Their folk interpretation of the marine environment and its ecology is not as detailed and phenomena specific as the scientific understanding. However, the fishermen's perception and knowledge is the end product of their years of intimate interaction and contact with the marine environment and the requirements of commercial fishing. They realize that their success or failure as fishermen hinges upon their effective use of the knowledge acquired and accumulated through their relationship with the environment. As a result, they have obtained insights of a very specific nature into the behaviour of commercially valuable fish and those characteristics and interrelationships of the marine ecosystem which affect their access to marketable species.

The Pagesville Resource Zone

The Pagesville fishermen exploit a specific, bounded portion of the inshore waters. Their resource zone stretches for approximately twelve miles from the shore out into the ocean and is around ten miles wide at its base. In all, they daily use an area of between 120 and 130 square miles of ocean. The pattern of community specific resource areas in fishing has also been noted by Forman (1970), Faris (1972), Nietschmann (1972, 1973), and Firestone (1967),

among others, in their ethnographies of inshore fishermen. Generally, the size of the resource area is the product of the interrelationships between technological developments, the size of exploitable commercial fish populations, market conditions, and the number of men intensively using the 'grounds'.

In Pagesville, the introduction of the gasoline powered Cape Island boats coupled with the decline in the number of fishermen and the collapse of the international dried fish market resulted in an outward expansion of the resource area at about the turn of the century. Today, the declining fish populations are forcing the men to go 'further off' in search of new 'spots'. As we have seen, this problem has also lead to the utilization of traditionally handline spots by longline fishermen. Hence, the expansion and contraction of resource areas is a function of the interplay between economic (i.e., market conditions), ecological (i.e., size of the fish populations), technological (i.e., adaptation, adoption and/or development of new gear), and population (i.e., the number of fishermen) factors.

The resource area used by the Pagesville fishermen is divided into several use zones which vary according to the time of the year, i.e., the fishing and lobstering seasons. As Map 4 illustrates, a triangular shaped area stretching from the 'gate rocks' to the 'half moons' and out to the

'Fairway buoy' is reserved primarily for gill nets. The nets are not set 'inside' (i.e., further up the estuary) of the base line because they would restrict channels into the Port Lameron, Upper Port Lameron and Pagesville harbors. Moreover, nets set 'inside' would be exposed to the possibility of damage or loss from boats running over them. The fishermen do not set 'outside' of the Fairway buoy because of the strength of the tides which can either easily 'part off' the net from its anchor or drag both the net and its anchor out to sea. In other words, the outside and inside boundaries mark the points where the possibility of good catches is negated by the fact that the fishermen stand a good chance of losing or damaging their nets. Any fishing within this area is done by handliners who stand little chance of fouling the nets.

The Pagesville zone is divided further into two more general sections that are defined by the type of technology used. Handlining is primarily done within six to eight miles of the shore. The remaining four to six miles to the outer limit are used mainly by the longliners. However, declining fish populations are forcing both the handliners and the longliners to range further away from their 'usual grounds' in search of fish. As a result, they are fishing, on the one hand, each other's traditional areas with an increasing degree of frequency. On the other hand, the fishermen are being forced to go further 'off' thereby expanding the outer limits

of their 'grounds'.

A separate set of considerations come into play during the lobster season. In choosing where to 'set', the fishermen make decisions that balance the chance of lost and/or damaged gear with the catch potentials of an area. In a fashion very similar to the pattern reported by Davenport (1960) for Jamaican pot fishermen, the Pagesville fishermen consider the contour and biotic make-up of a section of bottom, the strength of the tides and currents over the section, the possibility of sudden storms, and the reports of catches in the general area before deciding to set pots in any particular location. The further from shore they go, the greater the possibility that they will lose all or some of their traps. The fishermen prefer to set in 'shoal water' located reasonably close to shore. However, weekly and seasonal fluctuations in the availability of lobster inevitably force them to move at least a portion of their traps 'off'.

During the fall season, the fishermen start by setting their traps close to the shore. As the lobster become 'scarce' or 'stop crawling' on these 'spots', the fishermen begin to move their pots further out from shore. They start to make decisions, at this point, which balance the chances of lost gear with potential catches. The fishermen will continue lobstering until either diminishing returns, i.e., the amount of lobster being landed, creates a situation in which potential

costs become greater than potential catches or a sudden storm destroys and/or damages a good number of their pots.

The spring season, on the other hand, starts with the fishermen setting their traps on the 'offshore grounds' i.e., around the Brazil Rocks. "We do this until the large fan-tailed lobster begins to move in, then we move closer to shore." As far as they are concerned, this does not involve as great a risk in the spring as it does in the fall because there is a marked decrease in the possibility of sudden storms in the spring.

Marine Ecology and the Fishermen's Perception

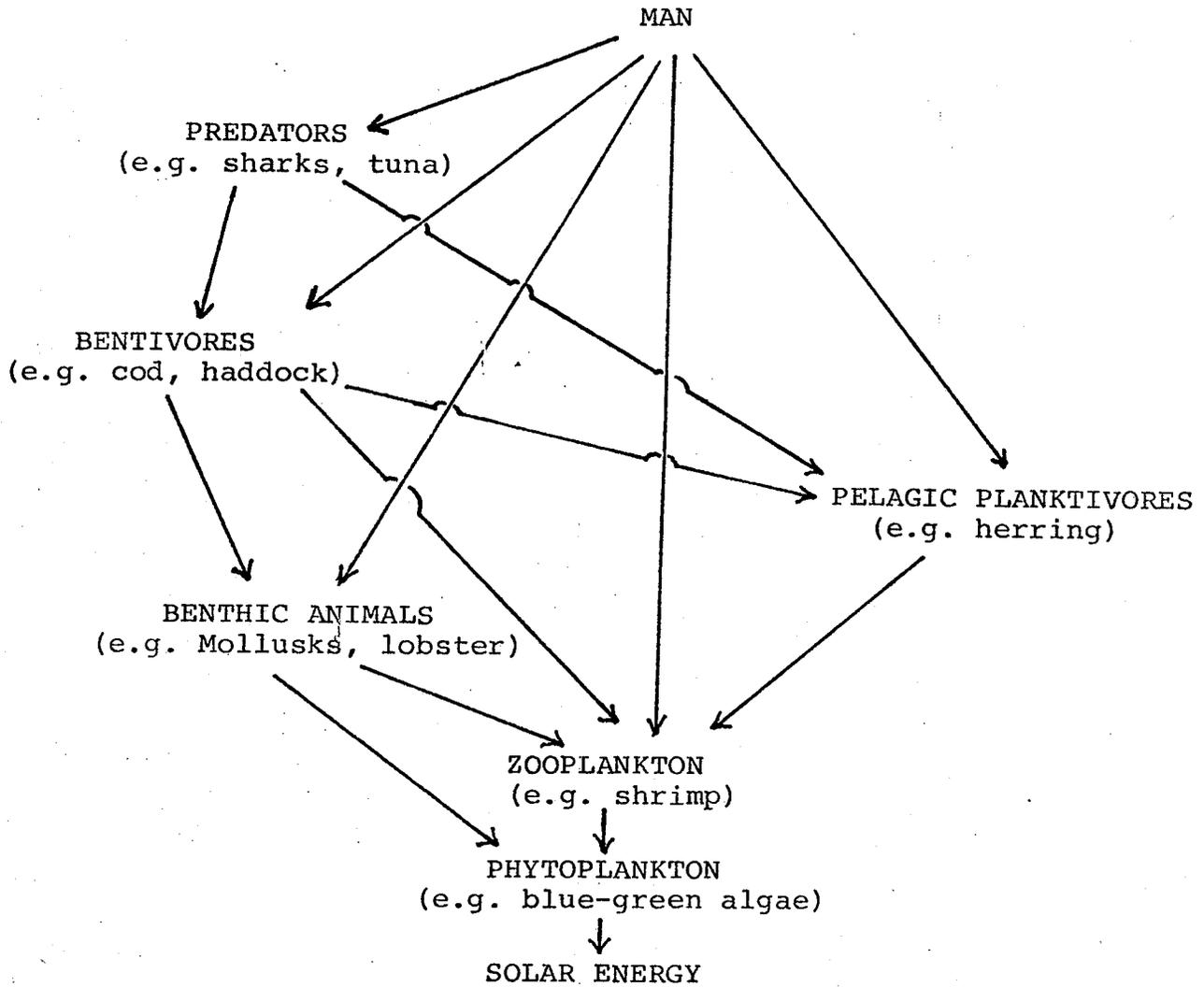
In general, successful fishing and lobstering involves daily decision-making: decisions based upon a combination of prior knowledge and the assimilation of existing information concerning the availability of commercial species and the behaviour of these species within the known marine environment. The importance and function of the fishermen's grasp of marine ecology is rooted in the necessity for making the right decisions and adopting the appropriate strategies for any given situation. This is a daily, on-going process on which success or failure pivots. Undoubtedly, the relationship between decision-making and 'knowing the environment' characterizes all of those cultural systems which rely upon hunting as the main mode of production. However, it is interesting and important to note that the fishermen's grasp

of marine ecology only concerns those relationships which affect his access to marketable species. Given this parameter, their understanding and use of these relationships is very specific and thorough.

At the centre of the fishermen's perspective is a total appreciation of the relation between the availability of any particular species, its source of food, and its feeding behaviour within the bounds of their resource area. As a number of fishermen told me, the Pagesville grounds are 'spotty'. By this they mean that the right biotic and abiotic conditions for any given commercial species only exist in certain places. The 'ground' is not uniform in its potential. In other words, "A person has to know what they're going after before they can tell you where they're going."

Marine biologists and ecologists have been the first to acknowledge that much remains to be known about the marine ecology of the North Atlantic (cf. Buzzati-Traverso 1960). However, the 'food chains' and trophic levels which characterize energy flows and inter-species relationships within the bounds of the North Atlantic continental shelf have been fairly well established (see Figure 4). The species that the fishermen are most interested in, Atlantic cod, haddock, pollock, herring, and the American lobster, are located in the middle and upper ranges of the food-chain.

FIGURE 4
The Basic Food-Chain of the Marine Environment⁸



Cod and haddock are demersal fish, i.e., bottom feeders. The fishermen's access to them is controlled by a great number of climatic, geo-morphological and behavioural factors such as water temperature (Templeman and Flamming 1965; Beverton and Lee 1965), tides and currents (Laevastu 1965), sunlight coupled with the transparency of the water (Brookes 1972), diurnal behaviour (Woodhead 1965), and seasonal migratory patterns (Nikolsky 1963). Within these limits, however, food and feeding behaviour are considered to be the most important elements controlling the availability of cod and haddock (Horsted and Smidt 1965; Brunel 1965).

The main source of food for cod in the southern sectors of the North Atlantic is herring, a pelagic, i.e. water-column feeding, planktivore which subsists on a select number of zooplanktonic species (e.g., amphipods and euphausiids) (Moiseev 1971:110). However the distribution of zooplankton is dependent upon the abundance of phytoplankton (e.g. algae) which in turn is controlled by illumination and the availability of biogenic elements (Moiseev 1971:93). Moiseev (1971:94) notes that:

...areas deficient in biogens (i.e. mineral nutrients) limit the development of phytoplankton and hence bioproductivity...the concentration of biogenic elements in the layer inhabited by phytoplankton is controlled by the following four factors: 1/ rate of regeneration of biogenic elements in this and deeper layers; 2/ vertical and horizontal movement of water, i.e. mixing

of water masses; 3/ rate of assimilation
of biogenic elements by the phytoplankton;
4/ the volume and distribution of coastal runoff.

In Chapter 2 we saw that the Pagesville area receives its maximum amount of sunlight from June through September. Pagesville is also characterized by relatively 'hard running', high tides: a ten to fifteen foot difference between the water levels at high and low tide. Hence, illumination and the vertical and horizontal mixing of water are not inhibiting factors in the growth of phytoplankton and, by association, the development and concentration of zooplanktonic populations. Yet, during the summer of 1974, for instance, the Pagesville fishermen had a difficult time catching enough herring in their nets for bait while the fishermen from the neighbouring harbour on the north-east side were catching herring throughout the summer.

In explaining this, one of the older Pagesville handliners told me that, "Over a long period of time, you will find that those harbours which have fresh water coming into them will be the places where you will find more herring on a regular basis." While there are not any major rivers or streams flowing into the Port Lameron estuary, the major local river does drain into the neighbouring harbour. Although speculative, it could well be possible that the biogenic elements fed into this harbour by the river provide excellent conditions for the 'blooming' of phytoplankton and a resultant

concentration of the zooplanktonic species preferred by herring for food. The fishermen whom I spoke to on this subject were quick to attribute the differences between the harbours and the grounds and their uncertain source of bait to their 'luck in picking a place to go from'.

For whatever reasons, their access to herring is limited even at the best of times. In attempting to minimize the risk of not getting any bait, the fishermen keep a close watch on the success of other fishermen. Once the information is available and a reliable trend in catches becomes apparent, they quickly pull up their nets and move them to the better location. Gill nets are set so that they hang and drift perpendicular to the motion of the tides. Mohr (1965), in his paper on herring behaviour, noted that: "...the herring shoals are cigar-shaped with the long axis in the line of the tidal stream" (Ibid.:776). Obviously, the fishermen set their nets in a fashion which fully exploits this aspect of herring behaviour. Furthermore, the fishermen recognize that herring lay on the bottom during the day because they are sensitive to light. The nets are set during the day and left to fish all night, the period during which herring rise to the surface to feed. Here, then, is an example of the manner in which a technology and a pattern of productive activity have been consciously developed to accommodate the behavioural characteristics of a desired species and, thereby,

to simultaneously alleviate risk and maximize production.

In areas such as the Pagesville grounds where biogens are not added to the water through coastal run-off "...high phytoplankton production depends primarily upon intensive vertical and horizontal water movements which enrich surface layers with biogens" (Moiseev 1971:110). Thus, the local quantity of phytoplankton production will be a function of the mineral make-up of the ocean bottom from which the biogenic elements are being taken. This relationship explains, in part, the 'spotty' nature of the Pagesville resource area. The mineral composition of the ocean bottom is not uniform. Hence, phytoplankton, zooplankton, herring, and the major commercial species will be concentrated in those areas of biogenic maximums because the marine food chain starts with the growth of phytoplankton.

The Pagesville fishermen have developed categories which describe the geo-morphological character of the ocean floor as well as make explicit statements concerning the relationship between the type of 'bottom' and the occurrence of commercial fish. For example, 'good haddock bottom' has a pebbly, shelly composition and is characterized by a biotic make-up which includes sea cucumbers, large mussels, 'raspberry', and 'celery'. On the other hand, cod are said to prefer 'hard, rocky bottom' with an organic community characterized by sea weeds and a variety of shellfish. Every reference that I

heard concerning 'good spots' described areas of bottom composed of pebbles, rocks, shells, and featuring a large, diverse benthic community. Regions of mud or sandy bottom, however, were considered to be virtual aquatic deserts with nothing to offer the fishermen. I assume that these relationships are not coincidental but refer to the role of bottom composition in the generation of the biogenic elements necessary for the development of phytoplanktonic organisms and the maintenance of zooplanktonic populations.

So far, we have seen that, at the local level, the availability of commercially valuable fish is a product of environmental relationships which control the generation and maintenance of phytoplankton, the base line in the marine food chain. Although the fishermen are not necessarily aware of or concerned with this basic ecological relationship, they do recognize and deal with environmental factors that more directly influence their access to marketable fish. For example, if the water is cold, planktonic organisms will not grow in sufficient numbers to cloud the water and, thereby, cut down on its transparency. As a result, herring, cod, and haddock, which are sensitive to light, will either remain motionless in shallower waters or retreat to deeper waters until these conditions change (Brookes 1972:26).

Faris has noted that the inshore fishermen of Cat Harbour have conceptual categories to describe these conditions.

Essentially, in the minds of the Cat Harbour fishermen, 'good water' is that water in which one can expect fish or lobster to be caught, and 'bad water' is the opposite...Further, bad water is 'dirty' and good water is 'clean'... But the terms dirty and clean, with their land based connotations, cease to have a 'logical' relevance to the optical appearance of the water, for good water - water that is clean - is in essence much less clear and much more full of opaque organisms and miniscule organic life, and hence fish, than is the crystal-clear, absolutely transparent dirty or bad water (Faris 1972:25).

In Pagesville, I heard the fishermen describe the conditions of the water in much the same manner. Spring fishing, it is said, starts with the 'worm school' - shoals of cod that come inshore as a worm-like zooplanktonic species proliferates in the gradually warming water. On another occasion, one handliner asserted that the best time for fishing was on overcast days when there was a 'bit of a chop up'. In this case, he was referring to the effect that light has on the occurrence of fish. Obviously, the relationship between warming conditions, the growth of 'herring food', and the availability of marketable fish is readily apparent to these men. Moreover they also recognize the detrimental effect that lengthy periods of maximum sunlight, high temperatures, and calm sea conditions have on the behaviour of fish.

As one man stated:

When it gets hot for awhile and there is lots of sun, the fish get lazy and lay around on the bottom floating with the tides. When this happens, they don't feed and won't bite.

There's no point going out except to kill time. In cases such as this, the fishermen start looking for a 'blow' to mix up the warm and cold layers of water. They maintain that the mixing of the water stimulates the fish and 'starts them moving and feeding'.

The Pagesville fishermen have also acquired information concerning particular aspects of a species' feeding behaviour which they use in enticing it to bite the baited hook. This particularly applies in the approach to fishing taken by handliners. These fishermen continually toss the head, backbone, and tail of the stripped herring, as well as all of the 'water-sodden' bait, overboard to 'gather the fish and get them started at feeding'. Demersal fish, in particular the cod, will eat until their stomachs cannot hold anymore. They have been known, in some cases, to fill themselves, vomit until empty, and then start feeding again. On many occasions, I saw fishermen pull in cod that had the tail of one of the herring which had been thrown overboard sticking out of their mouths. Knowing that demersal fish are gluttonous, the fishermen continually use this feature of the fish's appetite in attempting to maximize their daily catches.

We have already seen the manner in which the Pagesville fishermen exploit the diurnal vertical movements of herring. This cycle is also prevalent among demersal

fish. In a paper concerning the diurnal behaviour of demersal fish, Woodhead (1965) reported that both cod and haddock showed a marked increase in swimming activity at night. Not only were they more active, they also stopped feeding and left bottom, i.e. raised up into the water column, after the sun had set (ibid.:274ff.). He concluded that:

Changes in the vertical distribution of demersal fish may expose them to differences in the action of currents, and in some cases may take them into current systems other than those of the seabed. Essentially, the transport of the fish in such currents must have considerable effects upon their horizontal distribution. Diurnal vertical migrations may therefore be considered as an integral part of the distribution mechanism of demersal fish (Woodhead 1965:281).

Shoals of cod are reported to have dispersed into the water column after dusk only to regroup on bottom and start feeding just before dawn (ibid.:276). The important point is that they do not feed until they return to bottom.

The Pagesville fishermen do not engage in night fishing. Although the longliners leave port at around three o'clock in the morning, they do not get all of their line in the water and 'fishing' until just before dawn. The handliners leave the harbor just as dawn is breaking because they require light to find and haul their nets. However, they prefer to be on the grounds and fishing as soon after sunrise as possible. As one handliner told me:

If you miss the first couple of hours of fishing following sunrise, you'll have lost the best part of the day. We always do our

best during these hours. Most days, you'll be lucky if you catch as many in the last five hours as you've caught in the first two.

Here also lies the explanation of the high costs associated with empty nets. When a fisherman does not have fresh bait in his own nets, he must expend valuable time in either finding other men with fresh bait or returning to port for frozen bait. Their patterns of fishing activity are conscious adaptations to the diurnal behaviour of demersal fish. The fishermen strive to 'get their hooks in the water' in time to fully exploit the return of these fish to serious feeding after a night of mid-water wandering.

Thus far, we have examined the fishermen's perceptions of and accommodations to the ecology of commercially valuable fish. Although their interpretations of ecological relationships are not as subject specific and detailed as those offered by marine biologists, the Pagesville fishermen have acquired a working knowledge of those factors of the environmental reality which most directly affect their access to fish. Moreover, their patterns of production and their use of technologies have been consciously moulded to accommodate the behaviour of desired species, thereby, minimizing risk and maximizing the chances at 'a good day's fishing'. This fact is also reflected in the daily process of decision-making. Generally, there is not much conflict between the biologist's and the fishermen's view of those relationships

and elements which affect the availability and behaviour of herring and demersal fish. This, however, is not the case when it comes to the lobster and lobstering.

The Ecology of Lobstering

The American Lobster is a member of the species decapod crustacea which includes such familiar creatures as shrimp, crabs, and crayfish (Wilder 1973:1). It is one of the largest 'browsers' of the benthic or ocean bottom biotic communities that characterize the North Atlantic continental shelf. Until recently, the role played by the lobster in the benthic ecosystem was virtually unknown. Furthermore, the contemporary literature is considered to be primarily speculative in nature (cf. Miller, Mann and Scarratt 1971; Mann and Brown 1972).

The behaviour of the lobster is governed by seasonal and daily patterns such as feeding and moulting as well as environmental factors such as water temperature and the composition of the benthic community. Their preferred habitat is characterized by a rocky bottom and a diverse but luxurious biotic make-up which is composed of seaweeds, kelps, herbivores such as sea urchins, mussels, and periwinkles, and a large number of carnivores of which the lobster is the largest (Wilder 1973:2; Miller, Mann and Scarratt 1971:1733). According to Wilder:

During the daytime, particularly in shallow

water, lobsters spend much of their time hidden in burrows or crevices among the rocks. They search for food most actively at night, walking nimbly on the tips of their walking legs with their long sensitive antennae extended in front... (1973:2).

The lobster's diet is composed mainly of fish, other crustaceans, and shellfish. "All the fixed or slow-moving animals on the bottom, such as clams, mussels, starfish, sea urchins, crabs and worms serve as food. Bottom living fish such as flounders and sculpins are undoubtedly caught alive" (Wilder 1958:6-7).

It seems that the 'spots' inhabited by the lobster coincide, to a large degree, with those associated with some species of demersal fish, particularly the cod. 'Shoal water' is the term most often used by the Pagesville fishermen when they refer to these sections of the ocean bottom, as is indicated by the following typical comment.

When we go after lobsters, we mainly set in shoal water. The bottom is usually rocky and has a lot of weed. The best place to set is along the edge of the shoal and not right in it.

The fishermen use a wide variety of baits including salt herring, mackerel, 'fish clippings', fresh flounder, and sculpin. They set and check their pots during the day and let them 'fish' at night, thereby taking full advantage of the lobster's most active period of feeding. This provides another example of the manner in which the lobstermen's pattern of productive activity allows them to maximize their chances of a good catch by accommodating and, thereby exploiting, key aspects of the lobster's behaviour.

Most of the contemporary concern about the American lobster by marine biologists, fishermen, government officials, and buyers, focuses on the maintenance of viable commercially exploitable populations. Consequently, there is an increasing amount of research being conducted on the position of the lobster in the benthic ecosystem concerning subjects such as their position in the food chain and the environmental factors which influence their behaviour and distribution. In a series of recent articles concerning the trophic levels of benthic communities in St. Margaret's Bay, Nova Scotia, the American lobster was found to be the major or "...keystone species, in that their predatory activities are the key factor in structuring the community" (Mann and Breen 1972:605). Their predatory role is particularly important in terms of restricting the proliferation of sea urchins. Sea urchins feed upon kelp and seaweeds, which are the basic producers in the biotic system. Mann and Breen suggest that:

...locally dense populations of sea urchins commonly overgraze their food supply. In areas where this does not occur, there must be some limitation on sea urchin population density other than food supply, and the most probable mechanism is predation....the reduction in lobster population density below a certain critical level results not only in a decrease in the fishable stock, but also in a population explosion of sea urchins, followed by overgrazing of the seaweeds...(Mann and Brown 1972: 604-605).

Furthermore, this process decreases the possibilities of regenerating the lobster population (Bowles 1973:6-7).

Implicit in this is the argument that the maintenance of a commercially exploitable population and the benthic ecosystem is dependent upon a more judicious management of the lobster fishery. Mann and Breen (1972:605) conclude that "...large areas of relatively barren rock reported from many parts of the eastern coastline may, in one sense, be considered man-made deserts."

The Pagesville fishermen are aware, in a very real sense, of these relationships. In fact, Mr. Brown, a lobsterman of many years experience, described the same process but with an interesting twist. He noted that there had been a phenomenal growth in the sea urchin population after "the draggers had come in and cleaned out the catfish." This, he contended, had an adverse effect on the lobster populations because the sea urchins destroy the kelp beds in which the lobsters prefer to live.

The catfish (Anarhichas lupus L.) and the spotted catfish (Anarhichas minor O.) are solitary fish which live, at a variety of depths, on the sea floor. Their most profound characteristic is their dog-like teeth that are used to crack shells and the like (Wheeler 1969:305-306).

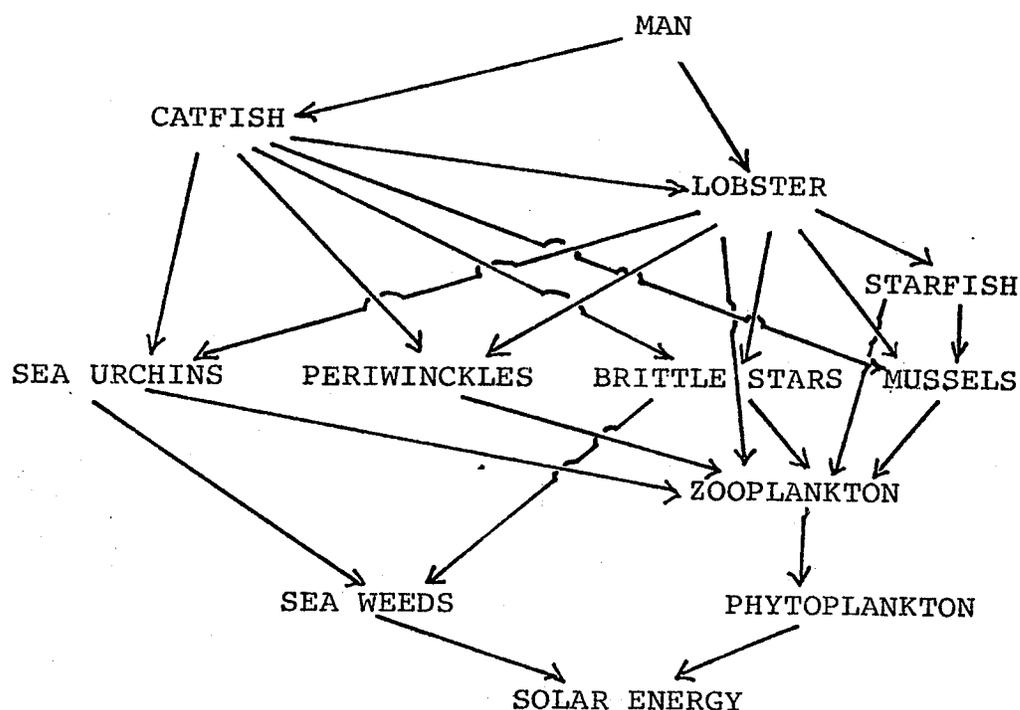
The adults...feed mainly on chinoderms, e.g. brittle stars (Ophinra) and sea urchins (Strongylocentrotus), crabs, particularly hermit and spider crabs, molluscs such as whelks, scallops, mussels, and sea clams (ibid.:306).

John Brown mentioned that: "At one time the catfish were so plentiful that they were all that we went out after." The sea urchin population only exploded after the draggers had decimated the catfish population. Since lobster have been fished intensively for over one hundred years with the same technology, I find the 'catfish hypothesis' is more reasonable than the argument that the sea urchin problem has been caused by an over-exploitation of lobster stocks by inshore lobster fishermen.

Apparently, the role of the catfish in limiting the population density of sea urchins has been overlooked by the contemporary researchers as they have failed to mention them in their analysis of the trophic levels characteristic of inshore benthic communities (cf. Mann and Breen 1972) (see Figure 5). Most fishermen supported John Brown's statements by attributing the destruction of large sections of their lobster ground to sea urchins which "have become numerous since the catfish were cleaned out." Furthermore, the fishermen report that the destruction of the catfish population has also resulted in marked changes in the distribution of lobster.

Before they [the catfish] were cleaned out, you never caught lobster on mud or sandy bottom because the catfish would keep them in the rocks. Now you'll catch'em in practically any place. Many of the usual places don't have as many lobsters now because they have spread out over a larger area of bottom.

FIGURE 5

The Food-Chain of the Benthic Ecosystem⁹

This is not to say that the fishermen do not view the over-exploitation of lobster populations as a contributing factor in this process. Many of them stated that there are just too many men using too much gear in the fishery. However, they maintain that the biggest part of the problem concerns the large number of men lobstering on a part-time basis, that is, men who hold full-time jobs outside of fishing during the majority of the year but who obtain class B

licences in order to go lobstering during the spring and fall seasons. The Pagesville fishermen consider this practice to be a threat to the livelihood of the men who depend on the returns from lobstering. A federal fisheries officer agreed that this is a large part of the problem and stated that the federal government is moving to eliminate the Class B licence.

We see, then, that the Pagesville fishermen command a comprehensive understanding of the ecological relationships influencing the distribution of lobster. The fishermen's daily cycle of activities, their use of baits, and their selection of specific locations in which to place their traps reflect the manner in which they use their understanding of lobster ecology in attempting to maximize their catches. Considered within the context of the institutionally defined seasons, a 'functional' appreciation of the ecological system is a prerequisite for success. Lobstering is the largest single contributor to the yearly incomes of the Pagesville fishermen so that 'good' and 'bad' years are defined by the sizes of the lobster catches. Yet, these fishermen must catch a maximum amount of lobster within a limited time if the year is to be classified as a good one. Aside from the time constraints of the governmentally regulated season, their chances of realizing reasonable catches are further limited by the behavioural response of lobster to changes

in the water temperature.

The Pagesville lobster season extends from the last Monday in November to the first of June. However, weather conditions and the temperature of the water keep the fishermen in port between January and early April. If the weather holds during the fall season, they can get in as many as sixteen weeks of lobstering; however, they consider themselves lucky if they are able to lobster for a total of ten to twelve weeks. The fishermen are forced to play a two-sided game within the context of the ten to twelve weeks. During the fall season, on the one hand, they race against falling water temperatures to catch as much lobster as possible before the water gets too cold and the lobster 'stops crawling'. On the other hand, the success of the spring season depends, to a large extent, on how quickly the water warms up and how much lobstering they can get in before the season ends. These patterns are reflected in the catch records presented in Table 5 and the percentages given in Table 6.¹⁰

TABLE 5

Landed Weights (Lbs.) for Lobster by Season, 1971-73

Season: Spring

Year: 1971

Week	1	2	3	4	5	6	7	8	Totals
Mr. Brown:	17	72	41	222	176	109	197	242	1088
Fish Buyer:	318	2385	2314	7679	6707	4467	9396	7179	39729

Year: 1972

Mr. Brown:	0	13	103	250	155	-	-	-	521
Mr. Green:	184	242	234	234	312	-	-	-	1159
Fish Buyer:	not available								

(TABLE 5 cont.)

Year: 1973	1	2	3	4	5	6	7	8	Totals
Mr. Brown:	87	149	223	156	226	58	-	-	912
Mr. Green:	556	172	359	239	323	134	-	-	1783
Fish Buyer:	6614	3564	5942	5138	5845	2879	-	-	29986
Season: Fall									
Year: 1971									
Mr. Brown:	606	445	230	91	-	-	-	-	1382
Mr. Green:	not available								
Fish Buyer:	20524	15482	7638	3070	569	-	-	-	48214
Year: 1972									
Mr. Brown:	362	187	89	95	-	-	-	-	733
Mr. Green:	606	477	308	93	-	-	-	-	1484
Fish Buyer:	13916	11477	6883	3981	-	-	-	-	36257
Year: 1973									
Mr. Brown:	309	261	72	16	-	-	-	-	658
Mr. Green:	542	518	133	0	-	-	-	-	1193
Fish Buyer:	14190	11477	2376	1593	842	563	-	-	31041

TABLE 6

Portion of the Seasons During Which
the Major Percentage of Lobster Was Landed

Season: Spring	Mr. Brown	Mr. Green	Fish Buyer
Year: 1971 (last 4 weeks)	67%	N/A	70%
1972 (last 3 weeks)	97%	67%	N/A
1973 (last 4 weeks)	73%	59%	66%
Season: Fall			
Year: 1971 (first 2 weeks)	77%	N/A	77%
1972 (first 2 weeks)	75%	73%	70%
1973 (first 2 weeks)	89%	87%	83%

From this data, we can see the unevenness of the distribution of catches over both the fall and spring seasons. The fall season is marked consistently by a rapid decline in landed weights following two weeks of high productivity, while during the spring season catches tend to gradually increase over the first couple of weeks before leveling off. These patterns are attributed to changes in the water temperature which, depending upon the direction of the change, stimulate or retard the movement of lobster (cf. Dow 1969; Wilder 1958,1973). Wilder notes that:

Their [the lobster] body temperature and consequent activity vary with the temperature of the water around them. Fishing is nearly always poor in mid-winter. Heavy winds move large masses of water and cause sudden, marked changes in the bottom water temperature. Such changes have a striking effect on the lobster's activity and the catch rises or falls accordingly (1958:8).

The fishermen recognize this relationship stating that "as soon as the water gets cold enough lobster will stop crawling." Thus, the fall season involves a race against the weather and dramatic declines in the water temperature while the spring season starts with the fishermen waiting for the water to warm up.

A good portion of the declines in catches during the fall season are also attributed to the fishermen's catching of most of the legal sized population in the time available. The lobstermen themselves tend to agree with

this. They argue that the populations are supplemented in the spring by a seasonal movement of 'large fantails' from the offshore to the coastal grounds as the water temperature rises. However, marine biologists maintain that lobsters do not migrate over long distances. Rather, the populations are locally based and replenish their numbers through natural growth (Wilder 1958:1973). Since the late spring, summer, and early fall are the lobster's major periods of growth (Wilder 1973:3), there appears to be an inconsistency in the argument. The scientists argue that the lobstermen catch most of the legal-sized adults of a locally based population during the fall season. As water temperatures decline and the period of winter immobility sets in the lobsters enter the season of no or minimal growth. Yet, the lobstermen realize sizable catches in the early spring as Table 5 demonstrates for Pagesville.

As I mentioned, the fishermen maintain that the catches will remain small until the 'large fantailed lobster' moves in from offshore. At the start of the spring season, they initially set their traps in the outer reaches of the grounds attempting to intercept these lobsters as they crawl in following the warming water. As the season progresses, the fishermen move their pots closer and closer to shore, again, following the migration of the lobster. These are, possibly, short distance migrations from offshore or else represent an exchange between locally based populations.

On the other hand, perhaps the fishermen do not catch as great a percentage of the legal sized adults as is presently thought. This is an area requiring further research, particularly because the inshore lobstermen believe that the federally supported offshore lobster industry is cutting into stocks which would eventually move inshore to replenish the populations on their grounds.

Knowing and Using the Grounds

Although the Pagesville fishermen, as a group, daily use most of the 'good' ground in their 120-130 square mile resource zone, only the most experienced fishermen know the locations of all of the best 'spots'. As can be imagined, the prerequisites for successful fishing are a comprehensive, 'functional' understanding of marine ecology and species behaviour and a precise knowledge of sea-bottom topography and the locations of the productive spots. These are acquired only after a lengthy period of apprenticeship during which young fishermen accumulate and assimilate the required information and experience. There are two general categories of fishing/lobstering spots: (1) those discovered and established by the early fishermen, and (2) those of a more recent origin. The locations of the first group have been passed down from generation to generation and are known by all of the contemporary fishermen. They are considered to be the most important spots. As a result, these are the 'spots' that the younger fishermen

first learn about.

The second category of fishing spots was either discovered by chance or initially located with an electronic echo sounder. These spots are not nearly as widely known as the traditional ones. In some cases, they remain as a type of private domain until knowledge of them becomes widespread. When the location of a new spot becomes public information, it starts being used as a common property resource.

Information concerning the discovery and location of new spots is obtained through a variety of methods.

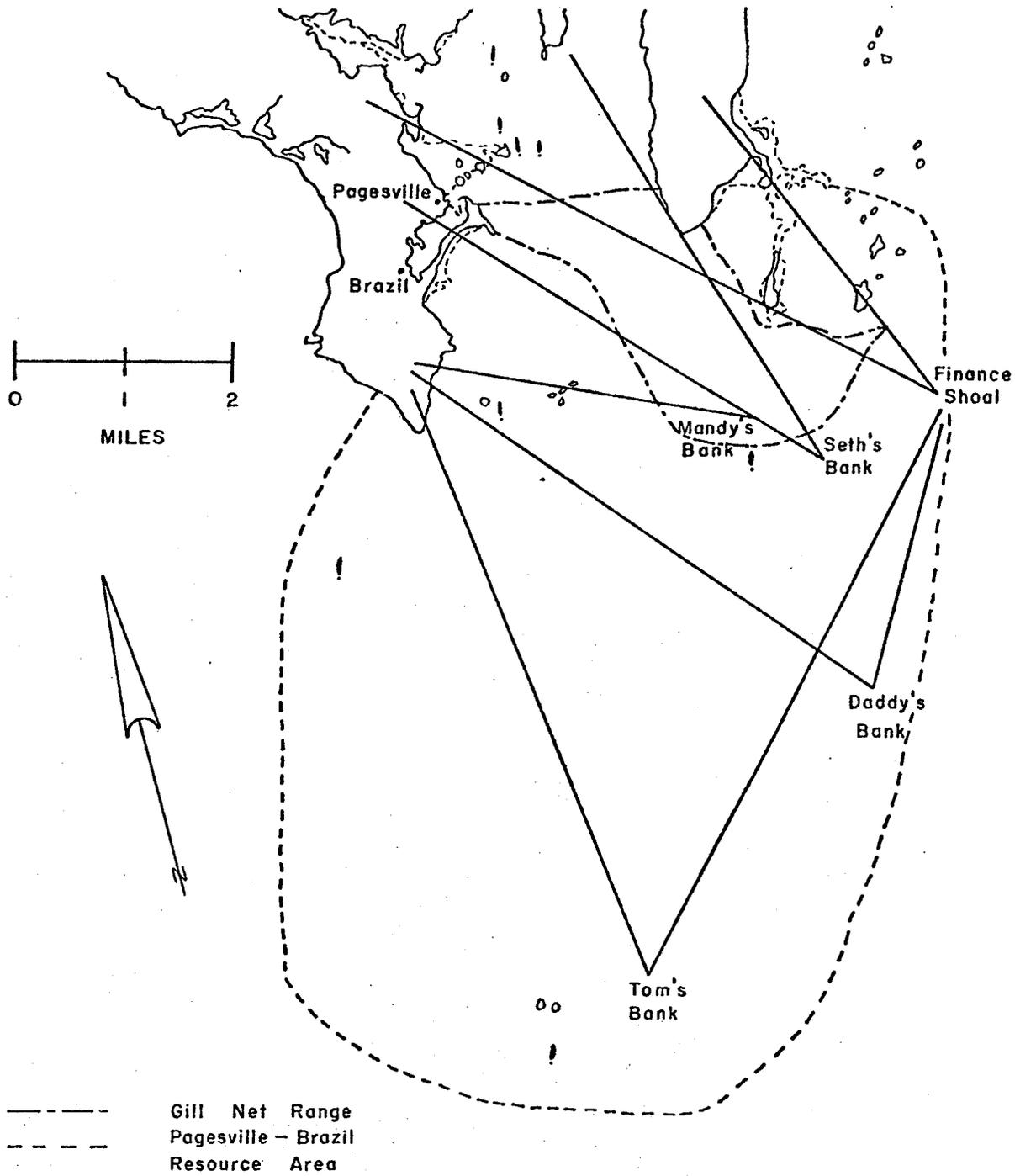
However, as one handliner mentioned:

How we mainly learn is by going there and having a look while they are fishing. You see, you idle up to them and start a conversation. While talking, you just casually look around and take note of the 'marks' and the compass bearings.

The fishermen who initially located the spot expect this to occur - chances are that they have done exactly the same thing in the past - and they do not try to avoid it. In a sense, this pattern of behaviour can be considered the ritualized manner through which the pertinent information is passed to the rest of the fishermen. The only sustaining vestige of 'personal' association with particular fishing spots lies in the name that they might be given. For example, 'Tom's Bank' is named after John Brown's father, the original 'discoverer' (see Map 4).

MAP 4

The Pagesville Resource Area



Adapted from: Department of the Environment. Marine Sciences Branch.
Canadian Hydrographic Service. #4215.

Once a spot has been found, its location is recorded in memory through triangulation of shore-based 'marks'.

'Mandy's Bank', for instance, is located by steaming to the spot where "the Stone-horse buoy lines up with the point of the peninsula and the inside edge of the Inner Rock is in a line with the steeple of the Pagesville church." This bank's name derives from that of the owner of a house which was one of the major 'marks' before it burned down a number of years ago. Similar to the pattern Forman (1970) found among Brazilian raft fishermen, the Pagesville men use the most prominent landmarks in pinpointing the location of their spots. Usually, they coordinate four 'marks'. In the above example these are the buoy, the point, the inside edge of a rock, and the church steeple, in recording the spot.

In some cases, different fishermen use alternate marks in establishing the same spot's location. Often, this is the result of the learning process that is grounded in observation rather than verbal communication. In other words, a young fisherman commits to memory, on many occasions, the location of certain spots, particularly the new ones, by selecting his own marks. By and large, however, the old, well-known spots have traditional marks which are used by all fishermen.

Of course, land-based marks can only be used on 'fine days'. Hence, the Pagesville fishermen have committed

to memory a separate set of 'locators' that are used in the event of fog, haze, rain, or snow. Central to this system is the great number of stationary buoys which pepper the Pagesville grounds. The fishermen have coordinated compass readings with time spent steaming so that they can locate any one of the stationary buoys from the mouth of the harbour, regardless of weather conditions. Each of the major fishing spots have been pin-pointed, in turn, by a further combination of compass direction and travelling time from the nearest stationary buoy.

The systems of location are used equally in both fishing and lobstering. A fisherman does not stand a chance of being successful in this occupation without at least a basic repertoire of fair weather marks and bad weather 'locators'. Even the young men trained during the introduction of echo sounders and radar concede that: "Only the most experienced and capable fishermen are familiar enough with the entire ground to go anywhere, regardless of the weather."

Now, considered within the context of the grounds' 'spottiness', the importance of knowing the 'marks' becomes more apparent. One might think that this factor would limit the number of men fishing at any one time as well as lead to the development and maintenance of 'personal spots'. In the past, the fishermen used to have their 'favorite spots', particularly for lobstering. "These spots were used by and

associated with individual fishermen even though the rest of the men knew the locations." However, the rise in the market value of lobster was closely followed by a similar rise in the number of men lobstering. Coupled with the limited number of 'good places for lobster', any quasi-personal claims to specific spots were soon eliminated. Today things are done on a 'first in the water' basis. Moreover, since accumulated experience and knowledge still controls a man's ability to find the best spots, many of the younger fishermen follow the older, more knowledgeable men out to the grounds and set their pots in the same places. Every now and then, this practice works to the disadvantage of the younger men. For example, John Brown described the following incident which illustrates this.

A couple or three falls ago, the first day of the season was pretty dirty. We had a thick fog and a bit of chop. Well, its important to get as many pots in the water as you can on the first day. You get most of your lobster in the first two weeks of the fall season, you know. Can't afford to lose many days. Anyway, I decided to try and set as many as I could. So, I got my man and we loaded the boat with about fifty pots and went out. Now, I was about the only man to go out that day. The fog was so thick that I couldn't see my marks so I had to go by compass and time. When I thought we were there, we ran the pots off. By the time we got back, the wind was blowing stronger so I decided to stay in.

The weather had lifted during the night and most of the boys had gone out by the time I got down there. Well, the first thing I did was check the pots I'd set. I tell you the place I set was plugged with pots. I guess some of

the boys seeing my buoys decided to set around me. The thing is that when I checked my marks, I discovered that I'd set about 100 yards short of the spot and all those boys had set around me thinking that I was on top of it. Well, I just pulled them up and moved them over, getting a good day's lobstering on that spot. Of course, I told them about it when I got back to port that evening.

This incident also suggests that the older fishermen do not try to trick the younger ones. In fact, they help them in many ways such as in offering advice and do not object to being followed out to the grounds.

Territoriality

Although the Pagesville fishermen identify a specific, bounded area of the ocean as 'their grounds', I did not find them to be as excessively possessive and secretive as I was lead to believe might be the case (cf. Acheson 1972). During several fishing trips, the men pointed out a number of boats from other harbours which were fishing the Pagesville grounds. The Pagesville fishermen were not visibly upset by the intrusion. In one case, one of the Pagesville men engaged an 'outside boat' in a friendly, joking conversation concerning the 'outsider's' inability to read a radar screen.

However, the Pagesville men do get upset if anyone abuses their grounds and, in the process, threatens the chances of everyone else. For example, one day a couple of boats from Cape Sable Island were fishing for cod and set large

mesh gill nets around the Brazil Rocks. The Pagesville fishermen believe that gill nets scare the fish, thus spoiling the fishing. As a result, there were angry words exchanged and a couple of minor confrontations. One of the Pagesville men had a longline buoy punctured because he had pulled one of these nets and taken the fish. Eventually, the Cape Islanders were harrassed to such a degree that they left the Pagesville area. Apparently the same thing had also happened during the preceding year. In that case, the Cape Island men only left after their nets had been 'parted off' and lost. As the above examples illustrate, these men will react with an intensive animosity if their means of making a living is threatened. Other than this, they appear receptive to the notion of outsiders using their grounds.

Admittedly, their possessiveness increases somewhat when it comes to 'outsiders' using the lobster spots. However, it is not nearly as intense as that suggested by Acheson for the Maine lobstermen.

Ordinarily, repeated violations will lead to destruction of the offender's gear. It is usual for one man operating completely on his own to first warn an interloper. In some places this is done by tying two half hitches around the spindle of the offending buoys; in other places by damaging the traps slightly. At this point, most intruders will move their traps. If they are not moved, they will be "cut off." This means cutting off the buoy and the warp line from the trap, which then sinks to the bottom where the owner has no chance of finding it (1972:65).

John Brown maintained that when someone from outside sets pots on their ground, the Pagesville men do not appreciate it, yet, by and large, they rarely do anything to discourage the 'invaders'. He did describe one incident concerning his father which had occurred many years ago.

One year he decided to set on the other side of Blanche Island. The boys over there didn't like this, so they destroyed a number of his pots. In turn, Dad and his partner destroyed some pots belonging to each fisherman in the area because they didn't know who had destroyed their gear. They also went to the houses of each of these fishermen and described what they had done, saying "If you want to keep this up we will too until none of us has any gear left." After that they weren't bothered any longer.

In any case, I have been told that this sort of action is unusual, particularly in cases involving full-time fishermen. Slightly different feelings are expressed by the Pagesville men regarding poachers, i.e., men with traps out during the closed season, and people who tamper with their traps. In these cases, they take direct action by destroying the gear (when poachers are involved), giving verbal warnings, and, ostracizing the culprit (when fellow fishermen are involved).

As opposed to the notion of an innate sense of intensive territoriality among these producers, I support the position presented by Bowles (1973:6) who maintains that the fishermen's reaction to competition will vary according to conditions of the benthic community and its ability to

maintain exploitable stocks of lobster. In other words, over-fishing could lead to a situation such as the 'sea urchin problem' which would result in lessened biomass production:

Lessened biomass production causes slaking in the growth increment of lobsters, leading to drop in recruitment into lobster fishery. Drop in legal lobster landings reduces number of fishermen that the local bottom can support, leading to changes in population structure and behaviour of the human community (ibid.:6a).

This seems like a much more reasonable explanation of the Pagesville fishermen's varying reactions to outsiders trapping in their resource area. There is a relation between the size of the lobster population and the number of lobstermen a resource zone can carry. Changes in the condition of the benthic community which affect the size of the catches and the overall stock will result in a number of reactions. These might range from an increase in the fishermen's possessiveness to the exclusion of all outsiders. Viewed from this perspective, the notion of blanket territoriality is totally inappropriate.

Equally important, repeated violations of a resource zone by outside full-time fishermen are not economically feasible. The boundaries of the Pagesville resource area represent the points where costs in terms of time spent travelling and gas negate potential profits. They are the lines past which diminishing returns convert profits into losses for productive effort. This applies to all of the

community based resource zones on the South Shore. Hence, a fisherman would penalize himself by fishing in another community's ground.

Markets and the Ecology of Production

The environment and its ecology do not determine the inshore fishermen's mode of production. To the contrary, changes in market conditions through time have moulded their mode of production. It is the market place which determines the marine species which the fishermen will be most interested in and knowledgeable about. The market governs their access to material resources and shapes their approach to production. The fishermen's ranking of marine life in terms of 'respect' reflects the relationship.

TABLE 7

COGNITION AND THE CATCH			
Rank	Species	Comments	Landed Value
1	Lobster	"They're one of the smartest creatures in the ocean."	\$1.25/lb.
2	Haddock	"Smart and tricky"	\$0.22/lb.
3	Cod	"Stupid and lazy"	\$0.15/lb.
4	Pollock	"Strong and pretty"	\$0.08/lb.
5	Catfish	"Ugly and nasty"	\$0.04/lb.
6	Dogfish	"Worthless and good for nothing"	\$0.00

Moreover, as we will see in the next chapter, the market affects all aspects of the social organization of production. The carrying capacity of the Pagesville resource zone in relation to the number of fishermen that can be supported is a function of the size of the commercially exploitable populations within the context of existing market conditions.

Ecological variables are important insofar as they play a central role in the fishermen's productive activity. They are an intrinsic aspect of production. This is reflected in the fishermen's patterns of activity, that is, the manner in which they use time and their technologies. It should be understood, however, that the fishermen consciously utilize what they know in minimizing risk and maximizing production. Their relationship with the environment is anything but 'metaphysical'.

Viewed from this perspective, the interrelationship between the fishermen and the marine environment is, in a very real sense, material and an important aspect of their mode of production. The marketplace defines what the fishermen will catch, but the fishermen have to go out and catch it. Thus, the marketplace defines the fishermen's 'effective' environment which, in turn, sets the parameters which constrain his productive activity.

Summary

In this chapter, we have seen that the Pagesville fishermen utilize a number of technologies in developing productive fishing strategies. The effective use of the material means of production depends upon the fishermen's practical understanding of the marine environment and its ecology. For Pagesville, fishing is best characterized as a hunting activity. The fishermen do not have absolute control over the resources and, hence, cannot predict what their catches will be from one day to the next. However, by acquiring an understanding of those aspects of marine ecology which most directly concern and affect the behaviour of commercially valuable species, the fishermen can use ecological relationships in attempting to maximize their chances of 'a good day's fishing'. The accumulation and assimilation of this type of information is essential for success in the occupation and can be considered an adaptation to the hunting character of fishing. To quote Bowles (1973:8): "We could not understand many patterns of the fisherman's behaviour until we studied the natural parameters which constrain their action."

CHAPTER 4

THE SOCIAL ORGANIZATION OF PRODUCTION

To effectively and efficiently utilize their technologies and 'know how', the Pagesville fishermen must meet certain minimum requirements in terms of the organization of labour, information, and time. Moreover, their social organization of production must include a degree of flexibility which allows them to adjust to the ever changing environmental and economic conditions. This general dimension of the fishermen's organization has led Barnes (1954:41) to maintain that the system is best characterized as one of "fluid social units." The studies of North American inshore fishing communities are almost unanimous in agreeing that the necessary flexibility is realized primarily through the conspicuous use of bilateral kinship relations in organizing labour (cf. Breton 1973; Faris 1972; Firestone 1967 and Ward 1965).

In this chapter, the focus will be on the manner in which work and labour have been socially organized to accommodate the ecological and commercial requirements of production. The principles governing crew composition, the intra-crew division of the value of the catch, daily access to essential information, and inter-fishermen exchange

relationships will be noted and discussed. Of particular interest will be the influence of changing market conditions and other external forces on traditional recruitment patterns and the availability of labour.

Most of the discussion concerning production in small fishing communities has focused on the processes controlling access to the material means of production, i.e., boats, gear, wharves, which function to maintain, over time, the most viable fishing units. For example, Faris (1972:87ff.) has found that the inheritance practice of equally dividing all of the property among one's sons ensures that, at least initially, no one person controlled enough of the material means of production to form their own crew. Thus, brothers were compelled to cooperate and fish together until they had accumulated enough capital to purchase the missing pieces of equipment and had enough sons to form a separate crew. Hence, crews composed of agnates (either brothers or fathers and sons) were the basic units of production. It has also been found that the fishing crew based upon agnatic links has proven to be the most effective work unit. According to Firestone:

The most important implication of this type of family is that it provides the number of men necessary for efficient fishing. For trap fishing one needs a number of men, and a group composed of a man with a few grown sons is about the right size (Firestone 1967:47-48).

Nemec (1972:16-21) has reported that a similar pattern is dominant among Newfoundland line fishermen. Apparently, the agnatic crew is the optimum sized producing unit in terms of providing the manpower necessary to effectively utilize the technologies and, thereby, to maximize returns for work efforts.

To an extent, this also holds true for the composition of crews in Pagesville. Given the existing technologies and work patterns, i.e., Cape Island fishing boats, gill nets, handlines, longlines, and lobster pots, crews with a minimum of two and a maximum of three men are the ideal size for efficient and effective production. However, the historical developments outlined in Chapter 3, particularly those concerning changes in the fishermen's control of the fish product and the fluctuating nature of market prices, have resulted in an out-migration of young men which has dramatically affected the traditional patterns of recruitment and crew composition. As will be shown, there has been considerable movement towards wage-labour and/or friendship recruiting patterns. Furthermore, there has been an added emphasis on inter-crew reciprocal and mutual help relations in an attempt to compensate for the potential workers lost through out-migration.

Crew Composition

Fishing

During the summer of 1974, there were twenty-five boats and forty-one men fishing out of the Pagesville harbour. Three of the boats with a total crew of eight were offshore longliners; four boats were used by eight men for inshore longlining; and the remaining seventeen boats were used by twenty-five handliners. Table 8 is a breakdown of the 25 fishing units by method, relationship to captain, sharemen, and crew size.

The fact that longlining cannot be effectively pursued by one man is reflected in the table. A crew of at least two men is required for hand setting, one to set and the other to steer, and hauling, one to tend the roller and the other to coil the trawl. Moreover, the amount of longline used by the offshore boats is so great, usually between 25 and 45 tubs of trawl consisting of as much as fifteen miles of line and twenty thousand baited hooks, that a larger sized crew is needed. All totalled, sixteen men or 39% of the active labour force use seven boats or 28% of the available craft in offshore and inshore longlining. The remaining twenty-five men (61% of the labour force) use seventeen boats (72% of the available craft) for handlining.

Ten or 59% of the handliners go fishing alone;

Although handlining can be successfully pursued by one man, a crew of two is considered ideal. A two-man crew makes more productive use of the available working space. Furthermore, a two-man unit can do jobs such as hauling the gill nets and tending three or more handlines with more speed and efficiency than one man alone.

Table 8

Crew Composition - Fishing
Relation to Captain

Method	# of Crew	Sons	SiSo	DaHu	Others	Total Sharemen	Crew Size
Offshore Longline	A	1	-	-	-	1	2
	B	-	1	-	1	2	3
	C	-	-	-	2	2	3
Inshore Longline	D	1	-	-	-	1	2
	E	-	-	-	1	1	2
	F	-	-	-	1	1	2
	G	-	-	-	1	1	2
Handline	H	-	-	-	-	-	1
	I	1	-	-	-	1	2
	J	-	-	-	-	-	1
	K	1	-	-	-	1	2
	L	-	-	-	-	-	1
	M	-	-	1	-	1	2
	N	-	-	-	-	-	1
	O	-	-	-	-	-	1
	P	-	-	-	-	-	1
	Q	-	-	-	-	-	1
R	1	-	-	-	1	2	
S	-	-	-	-	-	1	
T	-	-	-	-	-	1	
U	2	-	-	-	2	3	
V	-	-	-	1	1	2	
W	-	-	-	-	-	1	
X	-	-	-	-	1	1	2
Totals	25	7	1	1	8	17	41

The Pagesville handliners recognize that a two-man crew makes a better use of time and stands a greater chance of maximizing returns for work efforts. However, enough labour for this is not available, in part, because of the continuing pattern of out-migration among young men. In addition, there is a greater attraction to the potentially higher monetary returns in longline fishing. As John Brown explained:

Today, they are going to keep away from fishing if they can. I don't blame them as far as that's concerned. What I mean is they have another choice. If they go fishing most of them are going with strangers on longliners.

The majority of the handliners in Pagesville during my fieldwork were middle-aged or older while the men longlining were somewhat younger. Recruitment problems are severely cutting back on the productive capacity of handlining and will eventually result in the demise of this method of fishing.

Despite contemporary recruitment problems, traditional composition patterns are still evident in Pagesville (see Table 9).

Table 9

Sharemen by Relation to Skipper by Method

Method	Totals	Kinship Tie	Non-Kin
Longline	9 (53%)	3 (34%)	6 (66%)
Handline	8 (47%)	6 (75%)	2 (25%)
Totals	17 (100%)	9 (53%)	8 (47%)

Of the seventeen sharemen, nine or 53% are related to the skippers by kinship links. Seven or 76% of the nine are sons. However, these figures are misleading unless considered within the context of the methods of fishing. As Table 9 clearly illustrates, crews of kin-related fishermen are much more dominant in handline fishing (75%) than crews based on wage labour and/or friendship (25%). The reverse holds true for longlining since 34% of the sharemen are kin relations while the remaining 66% are non-kin.

The different patterns of composition evident in these figures are evidence of the changes taking place in the inshore fishery. Although the traditional kinship based composition pattern is prevalent among the handliners, the longliners are more concerned with meeting the labour requirements of their technology than with following traditional recruitment procedures which, in fact, might not provide the necessary labour. This is a function of the declining labour resources which have resulted from the migration of young men out of these communities and either into the large urban-industrial centres or into the capital intensive offshore fishery. Furthermore, the young men who stay in the inshore fishery prefer to go longlining.

In addition, it does not appear as if inheritance practices have served to reinforce the recruitment and composition patterns in Pagesville as they have been reported to

do in Newfoundland (cf. Faris 1972; Firestone 1967; Nemeč 1972).

A number of brief case histories may serve to illustrate this.

1/ John Brown - handliner

John Brown has been fishing on a full-time basis for over 44 years. He started when he was eighteen years old. John fished with his father who owned all of the gear for the first four years. He then started going fishing with Harry Black in a company owned boat. They fished together for over four years. With money that he had saved while fishing with his father and Harry Black, John bought a twenty foot open boat and outfitted himself with gear. From this point up to the present, John Brown has owned his own boat and fished alone.

2/ Al Green - longliner

Al Green started fishing on a full-time basis at the age of 14 and has been fishing for over 42 years. Since his father was not a fisherman, Al first went fishing with John Brown's father's brother who owned the boat and all of the gear. When Al started, the only thing that he owned was a handline. Al Green saved enough money to outfit himself and buy a boat while fishing with a number of captains. From that point forward, he has captained his own boats with a number of friends as crew until his son became old enough to go fishing. Twenty-four years ago, Al started to longline. At first, he went with his brother who was replaced by the son as soon as he came of age.

3/ Bob Black - handliner and part-time longliner

Bob Black started fishing when he was fourteen and has been fishing for over 27 years now. He started with his father and fished with him for five and one half years. Bob's father owned the boat and all of the gear but they equally shared expenses and profits. While fishing with his father, Bob saved some money and gradually outfitted himself. At the age of 19 he had purchased his own boat and started fishing alone. Bob's sons fished with him for a couple of years before deciding to join the crew of an offshore boat. Presently, Bob fishes with his son-in-law.

4/ Wilbur White - handliner

Wilbur White started fishing when he was 18 years old and has been going out for over 44 years. Wilbur fished with his father, who owned the boat and gear, for the first five years. While fishing with him, Wilbur saved enough money to purchase a boat and outfit himself. Wilbur's son fished with him for a number of years before joining the armed forces. Aside from this exception, Wilbur has always fished alone.

These case studies illustrate that in the past men began their careers fishing with their fathers. During this period of 'apprenticeship', they tried to save enough money to outfit themselves and 'go alone'. In other words, sons had traditionally stayed with their fathers until, on the one hand, they had learned enough about fishing and the grounds to 'go alone' and, on the other hand, had saved enough money to outfit themselves. This period usually took four to five years to complete. Apparently, the expense involved in purchasing their own boats and gear was small enough so that the young fishermen did not have to wait to inherit their fathers' boats and fishing gear before they could form their own crews and 'go alone'. Inheritance, then, did not function to keep agnatically linked fishing crews together and was not an important consideration in gaining access to material resources. The purpose of the father-son crew was one of training the son and giving him the time needed to save the capital necessary for the purchase of his own gear and boat.

This practice, in part, could be a pattern that had developed since the standards for the processed product were introduced by the federal government in 1928 (see p. 39f.). Until then, each fishing family had to have its own staging and wharf complex for storing gear and processing the catch. As Al Green explained:

Over 35 years ago, most of the fishermen had their own wharves, fish houses and stages. These were scattered all along the Pagesville harbour and up the shore towards Port Lameron. These structures were owned by the fishermen and were necessary because they sold their catch processed, that is, split, salted and dried. The land that these structures stood on was owned by private individuals but the fishermen were leased access to their stagings and shacks. These access rights passed from a father to his sons. In situations where more than one son fished, they either shared the facilities or one bought out the other. The access rights could not be sold to someone outside of the family that owned them. Access rights would be forfeited if the males in a family stopped fishing.

Since access to essential material resources such as stages, fish shacks, and wharves were controlled, to a large extent, by inheritance and family connections, agnatic relationships must have played a much more important role in production prior to 1928 than they do today.

I cannot draw more definite conclusions concerning the role of agnatic kin relations in the organization of production during the fishing season because the above historical points have not been thoroughly researched. To be sure, kin ties still play a significant role in recruiting

men into the inshore fishery. It does appear, however, that their importance has declined markedly over the last couple of decades. The rates of potential earnings and the availability of labour, in general, are currently the most important considerations governing recruitment and the composition of fishing crews. As a result, the labour requirements of longlining are being met through recruiting sharemen on a wage-labour and/or friendship basis. Moreover, the productive capacity of handlining is becoming limited because the labour that is necessary for this method to realize maximum returns has been either attracted to longliners or is leaving the community for employment in urban-industrial centres.

Lobstering

A slightly different pattern of crew composition and recruitment is present in lobstering. Table 10 is a breakdown of the lobstering units by kin relationships, sharemen, and crew size. The discrepancy between the number of craft (25) and men (41) involved in fishing and the number of boats (19) and men (29) engaged in lobstering is explained by the fact that two of the offshore boats with a total crew of eight continue to fish during the lobster seasons, four of the older handliners no longer go lobstering, and the two sons of fishing boat 'U' return to school in the fall.

Table 10

Crew Composition - Lobstering

Relation to Captain

# of Crew	Sons	SiSo	DaHu	Others	Sharemen	Crew Size
A	1	-	-	-	1	2
B	-	-	-	1	1	2
C	-	-	-	1	1	2
D	1	-	-	-	1	2
E	-	-	-	-	-	1
F	-	-	-	-	-	1
G	1	-	-	-	1	2
H	-	-	-	-	-	1
I	1	-	1	-	2	3
J	1	-	-	-	1	2
K	-	-	-	-	-	1
L	-	-	-	-	-	1
M	-	-	-	-	-	1
N	-	-	-	-	-	1
O	1	-	-	-	1	2
P	-	-	-	-	-	1
Q	-	-	-	1	1	2
R	-	-	-	-	-	1
S	-	-	-	-	-	1
Totals	6	0	1	3	10	29

In general, the composition of lobstering crews is somewhat similar to that of handline crews. Ideally, lobstering requires two men: one to haul and empty the pots and one to rebait and reset them. However, only nine or 47% of the lobstering boats have crews of two or more men. Here again is a situation resulting from the fishermen's restricted access to labour resources. Although the monetary returns from lobstering are much higher than for inshore fishing, they cannot compete with the earnings from offshore

longlining and the wages of urban-based industry. Furthermore, many of the adolescent males, who are available for either fishing or employment in fish processing during the summer, are in school during the fall and spring lobster seasons.

Seven or 70% of the lobstering sharemen are either agnatic (60%) or affinal (10%) kin while only three or 30% are non-kin. The recruitment of labour on a kin basis appears to be important in lobstering. Once the notion of restricted licensing is introduced, however, it becomes apparent that the maintenance of 'kin-crews' is more a function of external regulation than tradition. Given the fact that the number of lobster licenses has been frozen at a certain number by the federal government for every lobstering district on the east coast, they have become a scarce resource. In many cases, the licenses have become an important part of the 'inheritance package'. A son's only access to one is either through his father or by purchase at grossly inflated prices. I believe that licensing, more so than tradition, explains the dominance of agnatically-linked sharemen.

It is in lobstering that one finds the only use of wage labour. A lobsterman has to have help loading, baiting, and setting his pots during the first couple of days in the season even if he goes out alone for the majority of the time. The reason for this lies in the intense competition

between the Pagesville lobstermen 'to be among the first to set in the best spots'. At the start of the season, the men work at a rapid and efficient pace trying to load and set as many of their pots (up to 250) in as short a time as possible. Hence, those men who do not have access to kin or friendship labour hire 'outsiders', i.e., men from outside of the harbour.

Although the rate of pay is not standardized, most hired labour earns between twenty and twenty-five dollars a day plus the value of the catch from a specific number of predesignated traps (usually 20-25 depending upon the number of pots set). These wage workers are hired for the first and last weeks of the season. During the balance of the time, the lobstermen tend to their pots alone.

Division of the Catch

The specific manner in which the value of the catch is systematically divided among the participating fishermen has often been noted for inshore fishermen (cf. Faris 1972: 107-111; Foreman 1970:81-84; Breton 1973:401-402; and Firth 1966:235ff.). In Pagesville, a fisherman's earnings are determined through a number of formulae based upon the type of fishing being done and the ownership of the boat. The system followed by the offshore longliners starts by subtracting at least one-fifth of the value of the catch for the boat. Next, they take out all of the operating expenses

such as food, bait, and gas. The remainder is then divided equally among the crew and the captain.

1/ Offshore System (the figures are hypothetical)

$$\begin{aligned} \text{Share} &= \frac{\text{value of the catch} - (\text{a boat share} + \text{expenses})}{\text{number of men in the crew}} \\ &= \frac{3000 - (600 + 500)}{3} \\ &= \$633.33 \text{ per crew member} \end{aligned}$$

Although the captain of the boat only receives an equal crew share, he is usually also the owner of the boat, thus he gets the boat share as well. In the above example, the captain would have earned \$1233.33 for the offshore trip.

Inshore longliners and handliners use a simpler and more equitable system of dividing the value of the catch. They take one-fifth for both the boat and expenses and divide the remaining four-fifths equally.

2/ Inshore System (the figures are hypothetical)

$$\begin{aligned} \text{Share} &= \frac{\text{value of the catch} - 1/5 \text{ boat share and expenses}}{\text{number of men in the crew}} \\ &= \frac{200 - 40}{2} \\ &= \$80.00 \text{ per crew member} \end{aligned}$$

This system of division among the handliners is still effective, but the rising costs of bait are beginning to force the inshore longliners to adopt the offshore system. Again, the share for

the boat and expenses is taken by the owner of the craft. Today, with the size of the catches declining and the costs of operations going up, this barely meets the daily costs of running and maintaining the boat and gear.

The share formula for lobstering is different from either of the above. After all of the expenses are subtracted from the value of the catch the second man, if he lobsters for the entire season, is given one-quarter of the remaining sum. The balance goes to the captain whose share is large because he owns all of the gear and stands a good chance of having some of it damaged or lost during the course of the season.

3/ Lobstering System (the figures are hypothetical)

$$\begin{aligned} \text{Second Man Share} &= \frac{\text{value of the catch} - \text{expenses}}{4} \\ &= \frac{125 - 30}{4} \\ &= \$23.75 \end{aligned}$$

$$\text{Captain's Share} = \$71.25$$

For example, in a storm that hit the Pagesville area during last fall's lobster season Al Green and his son lost every one of their traps, a loss of over \$2000. worth of gear.

If a fisherman is working in a boat owned by the fish company, a different formula is used. The fish company takes one-third of the value of the catch for expenses and the use

of the boat. Moreover, the fisherman is compelled to sell his two-thirds to the fish company if he plans to use the boat again. Currently, there are only two company boats in use at Pagesville. At one time, the majority of the boats going from the harbour were owned by the fish buyer. However, rising costs, poor maintenance, and other financial problems compelled the buyer to sell most of the boats.

Forman (1970:83) notes that among the Brazilian raft fishermen:

The share system is the only means by which possible financial ruin can be averted by small owners who otherwise could not afford to pay wages on days when fishing is poor.

The effective and efficient utilization of the fishing technologies dominant in Pagesville requires a crew of at least two men. This particularly applies to longlining and lobstering (i.e., at the start of the seasons). Small-scale, independent, commodity producers such as inshore fishermen maximize production by organizing the available labour into work units which can best use the available means of production. However, they do not have sufficient capital to carry wage workers during periods of poor fishing. As Forman suggests, the share system alleviates this situation by giving every worker a portion of the returns from his labour. In Pagesville, all of the men who invested labour in fishing receive shares of equal value. The basic difference in the overall distribution of the value of the catch rests on the ownership

of the means of production. Skippers acquire the boat and expenses shares in addition to what they receive for their labour. Distributional differentiations are not made in regard to the value or the importance of the worker's labour. Every man is treated as an equal in this respect. The share system can be considered the product of a high risk but low capital gain activity.

Reciprocal Relations and Information Flow

On a daily basis, reciprocal exchanges and the accumulation/assimilation of information play key roles in the fishermen's organization of production and their specific patterns of work. On the one hand, each fisherman requires an enormous amount of information concerning factors such as environmental conditions, the availability of bait, the species of fish that are being landed, and those sections of the ground that are proving to be most productive before he can make his daily decisions regarding what to fish for and where to fish. On the other hand, each fisherman establishes and maintains reciprocal exchange relationships which involve the distribution of necessary goods, services, and information, with a number of fishermen from the same harbour. The purpose of these is to assist the fishermen in maximizing the chance of 'a good day's fishing'. Several researchers have noted the importance of information and reciprocal exchanges in the organization of the fishermen's work patterns (cf. Forman 1970;

Stiles 1972). However, these factors have never been emphasized as the core elements in the decision-making process and the social organization of production.

At the start of every 'fishing' day, the fishermen must make a series of decisions concerning what they are going to fish for and where on the grounds they are going to fish. Their decisions are based on the information that they were able to accumulate/assimilate during the previous day coupled with their knowledge of the marine ecology and the Pagesville resource area. There are a number of institutionalized means through which the fishermen gain access to information. These may be divided into 'on the water' and 'on the shore' information gathering and information disseminating mechanisms.

The information gathering process begins from the moment the fishermen go 'down to the shore' in the morning and ends when they return home at night. This may best be illustrated through a description of the daily round of John Brown, an inshore handliner.

John Brown arrived at the wharf at 4:30 a.m. It was a slightly foggy day. On his way to the rowboat, John stopped and asked a number of fishermen, who were having a conversation at dock-side, if anyone had gone out to the grounds. He also asked if they knew whether or not anyone had herring in their nets. They told John that Wilbur White and Hank Yellow had already left the harbour as well as all of the longline fishermen. However, Hank Yellow had come back in to pick up some frozen mackerel because his nets were empty. After hearing this, John went to the

freezer and took approximately twenty pounds of mackeral.

When we checked the two nets that John had 'off', we found them empty. John then decided to steam over towards the 'Half Moons' because he had heard that Wilbur White was netting some herring in the area. He also decided to haul in his two nets and reset them around the 'Half Moons'. When we located Wilbur, he gave us a 'bucket' of bait. At the same time, John asked him about the 'lay of the ground' and the best locations to set his nets.

Once the nets were set, John headed for 'Finance Shoal' mentioning that it was a good place for cod and pollock. After anchoring on the 'spot', John got out the handlines and turned on his CB set (marine radio). He made a number of calls to other fishermen from Pagesville. Their conversation concerned the scarcity of bait fish, who was catching herring, how much they were landing, and where they were catching it. Once all of this had been discussed, John signed off but he left his CB set turned on.

Throughout the morning the set was alive with conversation. The fishermen talked about where they were and how the 'fishing is'. They also mentioned who was fishing within their visual range and made comments on how these fishermen seemed to be doing. During the conversations on the radio, John interjected several comments concerning the relative 'truth' of the statements. He also made several calls and talked at length with several of the Pagesville men about how the day's fishing was 'shaping up'. John occasionally glanced at the boats within our visual range. He made several comments about their location and their apparent success. This pattern continued until we pulled up the anchor and headed for the harbour.

As we tied up at dock-side, a number of the men who were already in as well as a number of boys and older men gathered around John. They talked about how well they had done and how well others had done. The men spent quite an amount of time surveying John's catch. Its size,

its species composition, and the size of the individual fish were examined. The fishermen also talked about the weather, the water, the grounds, and the current trouble in attempting to catch herring. Many of the comments and statements that were made while 'on the water' were repeated and discussed.

This kept up until most of the boats had returned. Each man talked about what he had seen and how he had done. Each catch was examined for factual verification of the statements and comments that had been passed between the fishermen. John stayed around the dock, washing his boat and unloading his catch, until 1:30 p.m. Then he took his boat to its mooring place and went home for lunch.

Later in the afternoon, John returned to the wharf. He spent the balance of the afternoon talking with a number of men about the 'fishing day'. A number of fishermen offered speculative comments concerning what they might do during the next 'fishing day'. Around four o'clock, John returned home to do some work in his shed.

After supper, John went out to his work shed to do some netting. Within a short period of time a number of men joined him. Again, fishing was the major topic of conversation during the hours they were together. The success of a number of specific men was discussed at some length. However, the majority of the time was devoted to speculation concerning what they were going to do the next day. They seemed to be balancing and appraising the alternatives although none of them expressed a final commitment to any particular course of action. An amount of time was also spent in a discussion of the general trends in catches over the past month. The 'get-together' ended at 8:30 p.m.

This description applies equally to the patterns of activity I witnessed while spending some time with a couple of longline fishermen. Moreover, my informants assured me that the same

sort of pattern is characteristic of the lobster seasons. Thus, a great amount of time and effort is expended each day in gathering and checking information.

The 'on the water' communications serve a different function than the 'on the shore' exchanges. In the course of the day's fishing, the fishermen gather data concerning who is fishing on the various sections of the Pagesville grounds. They appear to be more interested in learning about locations rather than catches, although they absorb the speculative information regarding catches for future 'on the shore' reference. In the case of handliners with nets off, the information that they gather during the morning, concerning the location of herring and the success of the fishermen in landing enough for bait, is crucial because they must decide, while on the water, whether or not to move their nets. If they 'haul them on board', they must know where the greatest potential for herring is before deciding where to reset.

Once 'back on the shore', the Pagesville men spend much of the afternoon examining the catches and comparing their size and composition with the information that they had gathered concerning the location of other fishermen. This period can best be characterized as that part of the day during which the men verify and expand the 'raw data' that they accumulated while 'on the water'. The fishermen turn to an analysis of the proven information only after all of

the boats have returned to port.

Extending through the late afternoon and early evening, the period of analysis involves digesting the day's results and comparing them with their knowledge of the grounds and marine ecology. Usually this is done during small, informal gatherings held in places such as work sheds, Mr. Red's store, and the Port Lameron garage (see Map 3). The assembled fishermen initially make observations on the day's catches in terms of their overall sizes, the species composition, the size of the fish, who they have been caught by and where they are being caught. Then, they project the day's events into the general framework of weekly and monthly trends. At this point, one often hears references to the weather, the temperature of the water, and the effect of these on the movements and behaviour of valuable fish.

Towards the end of these gatherings the men begin to speculate on the course of action they will follow the next day. They raise and weigh the most viable alternatives regarding where to go and what to do given the existing conditions, information, and trends. By the end of the informal meetings, all of the men have a good idea of the courses of action open to them and the alternatives that they will have to select from the next morning. The final decisions, however, are made the following morning after they have 'read

the weather'.

Daily gathering and consideration of information is, without a doubt, at the core of the inshore fishermen's pattern of work activity. A series of decisions have to be made by the men on every 'fishing' day. The success or failure of each day's efforts hinge, to a large extent, upon the making of well thought-out decisions. This, in turn, can only be accomplished through access to and careful consideration of a large body of information. Stiles (1972), in a study of 'on the water' exchanges and communications between crews, has recognized the role that this process plays in ordering the Newfoundland fishermen's daily pattern of activities.

Recognition activities, and the accumulation of data in a direct exchange with another boat, are rapidly converted to strategy; or at least, they are offered openly to the crew by whomever has perceived the information in question.... from the crew's point of view, forming a strategy involves the combination and resolution of inter- and intra-crew exchange...(ibid.:51).

In Pagesville, decisions concerning the selection of appropriate strategies are based on the data gathered on a daily basis through formalized mechanisms and procedures. Considered within the context of the nature of fishing, the maintenance of unrestricted and accessible information flows is essential to the generation of strategies which will allow the fishermen to minimize risks and maximize returns for their work efforts.

In fact, the success of the information gathering systems has led to several problems in the contemporary era of declining fish populations. As John Brown asserts:

A fellow has a good day's fishing, usually the first one in quite awhile, and plans on going back to the same spots to try for two in a row. Next day, you find that you can't get your hook in the water for the number of men that are fishing the spot. They hear about someone having a good catch and plug the area with hooks.

In other words, declining fish populations have resulted in fewer men realizing good catches on fewer spots. The fact that a man's position and success is public information results in the concentrated exploitation of proven sections of the Pagesville grounds. I suspect that, unless conditions change so that more men have greater access to larger fish populations, inshore fishing will become much more competitive and secretive than it is today.

Now that we have seen, on the one hand, the problems facing the fishermen regarding recruitment of labour and, on the other hand, the importance of information in the organization of production, we can better appreciate the role that reciprocal economic exchanges and mutual help relations play in assisting the fishermen to maximize production. Reciprocal exchanges and mutual help relationships are evident to a lesser or greater degree in almost all of the fishermen's productive activities. However, the spheres of the relationships are bounded by several interrelated

factors.

To begin with, the Pagesville fishermen only establish reciprocal exchange and mutual help relations with men who fish out of the Pagesville harbour. Even though they know men from outside harbours such as Port Lameron, they do not initiate reciprocal or mutual help ties with them. When asked why, the Pagesville men say: "Because they don't go from the same place." I suspect that the 'harbour constraints' emphasize the need for fishermen to establish links with men from the same harbour in order to maximize their chances in the exploitation of a common property resource, the Pagesville grounds. After all, these are the men with whom a fisherman most frequently works and socializes. Moreover, the hunting nature of fishing has stimulated the development and maintenance of a cooperative, as opposed to a competitive 'fishing ethic'. In other words, an individual's 'chances at a good day's fishing' are enhanced through his cooperation and ties with the collectivity. Hence, they serve the 'common good' as well as their own ends by excluding 'outside fishermen' from reciprocal and mutual help relations and only forming bonds with men from the same harbour. This does not prohibit temporary or situational exchange relationships from occurring with 'outside men'. It emphasizes that permanent ties are only formed between men who fish from the same harbour.

Sahlins (1965) has enumerated and defined a number

of types of reciprocal exchange systems: generalized, balanced, and negative reciprocity. Although generalized reciprocity situationally occurs in Pagesville, it is relatively unimportant in the formation of long-lasting exchange relationships. Of particular interest to this study are his comments on balanced reciprocity.

'Balanced reciprocity' refers to direct exchange. In precise balance, the reciprocation is the customary equivalent of the thing received and is without delay... 'Balanced reciprocity' may be more loosely applied to transactions which stipulate returns of commensurate worth or utility within a finite or narrow period...

Balanced reciprocity is less 'personal' than generalized reciprocity. From our vantage point it is 'more economic'. The parties confront each other as distinct social and economic interests. The material side of the transaction is at least as critical as the social: there is more or less precise reckoning, as things given must be covered within a short term. So the pragmatic test of balanced reciprocity becomes an inability to tolerate one-way flows; the relations between people are disrupted by a failure to reciprocate within limited time and equivalence leeways. It is notable of the main run of generalized reciprocities that the material flow is sustained by the prevailing social relations; whereas, for the main run of balanced exchange, social relations hinge on the material flow (Sahlins 1965:147-148).

This system is characterized, then, by short-term direct and defined exchange and, more importantly, by the fact that 'social relations hinge on the material flow'. The dominant mode of exchange between the Pagesville men is balanced and reciprocal. However, it is not necessarily direct or immediate, stipulating returns of equal value for goods and

services should be given when needed. So, reciprocation usually occurs within a finite period of time, but only when the receiving party requires the goods.

The distribution of fresh bait is the best example of balanced reciprocity in Pagesville. When a fisherman finds that his gill nets are empty, he will 'steam' over to spots where men from the same harbour are pulling their nets to see if they caught any herring. On a couple of occasions, John Brown passed several boats from Port Lameron which were hauling nets on his way to spots occupied by Pagesville men. When he arrived, John waited until the nets had been pulled, 'plucked', and reset before approaching to within talking distance. The conversations usually ran something like this:

John Brown: G'morning. Looks like it'll be a fine day for fishing.

Wilbur White: Fine. Yes, I'd say it might be.

John Brown: Well, I pulled my nets and didn't find a herring in them. Got'em on board here and am going to set in a different spot.

Wilbur White: Yes, they certainly are scarce. Dog days I guess. The water's too warm. They're staying on bottom.

John Brown: Would you say that I should set 'em around here.

Wilbur White: Well, I've been getting some but they're none too plentiful I can tell you. Yes, I guess around here is as good as anywhere.

While they were talking, Wilbur was filling a bucket with

fresh herring. The conversation terminated after the bucket had been passed over and Mr. Brown had emptied it into his bait box.

I witnessed these transactions on several occasions. Either John was given bait or John gave bait. However, the exchanges only occurred between three men: John Brown, Wilbur White, and Bob Black. There was never a direct request made for bait in the course of the transactions. Rather, it was voluntarily passed from the one with the bait to the one without the bait during the conversations.

The fishermen rationalize exchanges on a 'why waste it' basis.

If you've got more than you need, you'd just be throwing the rest away at the end of the day. It's better to share it around than to waste it.

At the same time, however, they prefer to share with fishermen who have demonstrated a willingness to provide themselves with bait by maintaining a couple of set nets, but who have come up empty on particular days. This policy, on the one hand, reinforces the 'ethic' concerning self-sufficiency and work. On the other hand, it ensures that a fisherman will establish exchange relationships with other fishermen who have proven that they will be in a position to reciprocate at a later date.

In addition to the direct exchange of bait, some of the men engage in reciprocal transactions which have a greater

time depth. For example, during the winter of 1974, John Brown repaired some gill nets for George Purple, the manager of the Pagesville fish plant. Together with Peter Red, the owner/operator of the Brazil general store, George Purple sets as many as thirty gill nets during the fishing season. They tend to the nets in the early morning before they open up for business. John Brown did not accept a cash payment for his work, but expected to be given free bait on those days in which his nets were empty. During the field work, George Purple and Peter Red gave preference to John. On several occasions they travelled far out of their way to ask him if he needed any bait.

Labour, however, is not utilized in a reciprocal fashion in exchange relationships between two or more fishermen. There are several activities which involve the cooperative efforts of most of the fishermen from the harbour. The best examples of the collective input of labour are the January 'haul up' and the March 're-float'. During the highest tides in January, all of the fishermen who want to haul their boats up onto dry land for the winter help to bring each others' boats on shore.

You have to hire a man with a bulldozer to pull the boats up. First of all, we place skids up the slope of the hill to guide the boats up. Everyone pitches in to help hold the boat steady. It's all volunteer help.

Basically the same thing occurs when they gather to re-float

the boats during March's highest tides.

We put them back in the water anywhere between the tenth and the fifteenth of the month. People turn out again to help each other. No bulldozer this time; just a guideline and as many men as boats to be put back in the water.

In addition to these yearly events which involve immediate reciprocation, a fisherman will voluntarily help another to haul his nets or move anchours on particular occasions. Repayment is not expected or requested either in specific forms and quantities or over a specific amount of time in situations such as these. They can best be characterized, in Sahlins's terms, as a form of generalized reciprocity (Sahlins 1965:147).

Balanced reciprocal exchange relationships are neither isolated nor exceptional events. Rather, they are an important aspect of the inshore fishermen's social and economic relations. Exchanges in commodities such as bait, hooks, line, nets, anchors, and specialized services (e.g., net mending) are committed to memory and the recipients are expected to repay the donors either with the same quantity of the commodity given or with a different commodity of equal value. The primary function of the exchange relationships is to provide the fishermen with a series of formalized mechanisms through which they can gain access to scarce resources in times of need thereby maximizing their potential for 'a good day's fishing'. At the same time, they perform

the subsidiary role of creating and maintaining intra-harbour cooperation and solidarity in the exploitation of a common property resource.

Barth (1966:4) has suggested that:

...transactions have a structure which permits analysis by means of a strategic model, as a game of strategy. They consist of a sequence of reciprocal prestations, which represent successive moves in the game. There must be a ledger kept of value gained and lost; and each successive action or move affects that ledger, changes the strategic situation, and thus canalizes subsequent choices.

The reciprocal transactions engaged in by the Pagesville fishermen can be neatly explained by this model. Indeed, the giving of bait, for example, alters the position of the giver in relation to that of the recipient. The gift must be repaid in equal proportions at some later date set by the giver. Repayment and the further giving/receiving of prestations continually 'affects the ledger, changes the strategic situation, and thus canalizes subsequent choices'.

However, such an analysis of the Pagesville situation misses the important aspects of reciprocal relationships by placing the emphasis upon economic gain and position as opposed to economic well-being. In other words, implicit in the Barthian transaction model is the 'quasi-entrepreneurial' principle that individuals engage in reciprocal relations for social and/or economic gain. It is a game of strategy in which individuals vie with each other through exchange relationships for valued and 'superior' positions. Contrary

to this, reciprocal exchange and mutual help relationships in Pagesville can best be appreciated if viewed as the mechanism through which the fishermen gain access to scarce and randomly distributed resources. Their purpose is to maximize the fishermen's production potentials. In the case of herring, the reciprocal exchange of bait can be viewed as an adaptation to the random occurrence of bait fish. They also serve as a 'leveling' device insofar as they distribute valuable and necessary commodities while, at the same time, giving as many fishermen as possible an equal chance at 'a good day's fishing'.

This is not to say that reciprocal relations are without social consequences. On the contrary, they form social as well as economic ties between the men using the Pagesville facilities. With involvement in the system comes an explicit social responsibility to hold up your end of the bargain. Negligence in doing so leads to both social and, more importantly, economic sanctions. Socially, a man may be branded with a reputation which ends all of the necessary economic and communicative relationships. Not only would such an individual be ostracised from the social life of the community, he would be treated as an 'economic outsider'. In other words, his access to scarce resources and information systems would be severely limited. A fisherman in this unenviable position could not last long as a viable

producer. Eventually, he would be forced either to leave the community or to get out of fishing.

In Pagesville, reciprocal exchange and mutual help relationships serve to reinforce cooperation and equalize opportunity. This 'ethic' is actively recognized and pursued in the inshore fishermen's organization of production. One of the best examples of cooperation and equalization lies in the fashion 'wharf space' is allocated at the start of every lobstering season.

Every fall we go down and draw up the wharf. We measure it off into so many square feet. Then we put numbers on it. From one to how many boats there are going lobstering that season. If there are twenty-four boats then there are twenty-four lots. It doesn't make any difference how much gear you run. I run 150 and get the same size lot as someone running 250. The fewer the boats, the larger each lot will be. Each lot number is written on a separate slip of paper and placed in a hat. Then, each one of us draws a slip. I can put my traps on the lot anytime after the draw.

Needless to say, very few of the lots give direct access to the water. Approximately seventy-five percent of them are located away from those portions of the wharf where a boat can tie up. The further away from the water a man's lot is the greater amount of labour and time invested in carrying and loading/unloading lobster gear. If gain or individual advantage at the expense of others were the principles ordering the fishermen's organization of production, then systems of redistribution, cooperation, and equalization

would not be in operation. In fact, given the hunting nature of fishing, strategies for individual gain would be maladaptive since they would lead to secrecy and the 'individualization' of production. The fishermen have developed systems of reciprocation and cooperation in response to their lack of control over marine resources and in order to minimize risks.

Moreover, the problems that were outlined earlier concerning the fishermen's restricted access to labour resources, particularly in regard to the handline fishermen, have tended to intensify the importance of reciprocal exchange and mutual help relations. In other words, as the size of the fishing populations has declined, an increasingly strong emphasis has been placed on cooperation and reciprocity in the social organization of production. For example, many of the men assist each other in hauling nets, a job for two-man crews. Repayments for these services are not expected in specific quantitative, qualitative or temporal terms, hence they more appropriately fall under the rubric of generalized reciprocal relations.

Summary

In summary, I have argued that the social mechanisms governing the recruitment of labour, the composition of crews,

the gathering and the assimilation of information, the development of reciprocal exchange and mutual help relations and the emphasis on cooperation are rooted in the requirements of successful commercial fishing. The social organization of production among the Pagesville fishermen is the product of the demands placed on the fishermen for the effective use of a series of technologies and strategies within the constraints of the marine environment. I have stressed that these relationships and systems are economic and material in nature. They function to provide each fisherman with the best possible chances at 'a good day's fishing' by minimizing risk and equalizing opportunities.

CHAPTER 5

MARKET RELATIONS

As in the fishermen's actual production activities, the external industrial-commercial capitalistic economy exerts a powerful influence on the fishermen's social organization of production. The prices that they receive for their catches, the role of the federal government in regulating the fishing industry, and the nature of production for and distribution in a capitalistic economy dramatically affect the fishermen's access to material resources, e.g., gear and boats, while also affecting the demographic composition of the fishing population.

This chapter is concerned with the nature of the fishermen's relationship to the external market. An emphasis is placed on the historical basis of the contemporary 'harbour level' exchange system and on the economic principles governing fishermen/buyer relations. Also, the role of the federal government in reinforcing and influencing, through policy decisions and legislation, the existing 'harbour level' economic order is stressed.

All of the Pagesville fishermen sell their entire catches to Orange's fish firm which is the only fish buying

and processing concern located at the harbour. The business was started by Henry Orange, Sr. over forty years ago. Following his death, two sons, Henry and Jack Orange, took it over. Within a short period of time, however, they ran into financial difficulties and recently sold out to the Port Lameron fish firm, a much larger American-owned and controlled establishment. Henry Orange told me that they were forced to sell because they could not obtain a loan from the federal government to cover the costs of operations and payments on two newly purchased trucks which were needed for shipping processed and fresh fish to the Boston market. Although it operates under the same name, the Pagesville fish firm is now a branch plant of an American corporation. George Purple, a local ex-fisherman, manages the plant and its business with the fishermen. He is directly responsible to the 'corporate manager' in Port Lameron. The Orange brothers continue to maintain ownership of the trucks. They contract their services as shippers to the Port Lameron firm and drive the fish product to the United States. They also function as foremen for the Pagesville branch plant. Their duties are assisting with and supervising the weighing of daily catches and the various steps of processing the fish product.

Prior to selling the business, the Orange brothers called a general meeting of the fishermen to inform them of their intention to sell. They explained the reasons for the

sale and informed the fishermen to whom they were selling the business. More important, however, is the fact that the Orange brothers asked and received from the fishermen assurance that they would continue to sell their fish to the new firm. Reflected in these events are characteristics of the mercantile system which has dominated the Canadian Atlantic inshore fishery over the last two hundred years.

The 'Truck System' Mercantile Economy

In Chapter 2 I discussed the manner in which the outport economy functioned historically (Supra p. 36f.) The permanence, durability, and dominance of mercantile capital in the inshore fishery can only be appropriately explained if placed within the context of those historical and material factors which shaped the contemporary situation. Briefly, the maintenance of Canada's colonial status until 1867 "...meant the continued domination of merchant capital at the expense of industrial capital, which would compete with Britain" (Naylor 1972:6). The expansion of the Nova Scotian fishery following the American Revolution was motivated by the geographically and politically favoured position that Halifax merchants and their outport associates held in relation to the British controlled West Indian trade. Dried-salt cod was needed to feed the plantation slaves, soon to be 'free labourers', on the French and British islands.

Nova Scotia's proximity to good fishing grounds, the readily available merchant capital based in Halifax, and the absence of competition from New English merchants created the stimulus for growth in the trade (cf. Innis 1954).

These historical circumstances resulted in the creation of outport fishing settlements and a system of mercantile monopoly which fully exploited the isolated fishing communities through the 'truck system'. In fact, given the nature of mercantile colonialism in Canada, the situation could not have been more favourable from the merchant's point of view.

In all the colonies short-term, low risk merchant capital dominated primary staple extraction, whose mode of production was typified by a low ratio of fixed to circulating capital. The system served to maximize the surplus appropriated by the metropole, and consequently minimized the amount of local capital formation (Naylor 1972:6).

From almost the moment of their creation, outport communities have been thoroughly integrated into and exploited by this system. The key link between the fishermen and the 'greater market' has always been the buyer/processor.

Originating in the late eighteenth century, the 'truck system' has been rooted in a means of exchange which forms and maintains ties of debt and dependence, based on the extension of credit, between the fishermen and the fish buyers. The fishermen obtain gear from the buyers in the early spring on credit against the value of their summer and fall

catches (Faris 1972:114). Needless to say, the economics of the system created a no-win situation for the fishermen. The best portion of their earnings went to the buyers to cover bills and the balance was required to carry the fishermen and their families through the winter. Every spring the process was repeated. In other words, the fishermen were always either near or in a debt situation. Moreover, the nature of the credit arrangements ensured that the fishermen sold their catch to the local merchant. Hence, the practice and policy of the system was to maximize the surpluses taken by the buyers and the city-based merchants while minimizing the ability of the fishermen to generate capital.

In many ways, the 'truck economy' is still operating in Pagesville today. When asked why they sell their catch to only the Pagesville buyer, the fishermen reply that: "We always sell to the buyer at the harbour we go from." In small communities such as Pagesville, there is usually only one fish buyer per harbour. This results in true monopoly if there are not any neighbouring fishing communities with different buyers within reasonable travelling distances. Furthermore, it seems that, in some cases, fish buyers from neighbouring communities reach informal agreements on the prices they will offer the fishermen, thereby, destroying any advantages that the fishermen might obtain from competition. For example, John Brown told me of an incident concerning

competition between buyers which occurred over twenty years ago.

Once a man, I think he was from the Lockport Storage Company, set up a shack at the base of Port Lameron harbour and started buying fish. He was offering a higher price than Orange or the Port Lameron buyer. Some of the men from Pagesville, including dad, started to sell part of their catch to him and part to Orange. Well, Orange and the Port Lameron buyer didn't like this at all. They started to make it difficult for the men selling to him to buy gas, bait and gear at their places. Soon the new buyer was forced to close up and move out. There were bad feelings between myself, dad, and Orange for a long time because of this.

Prior to the appearance of competition, Henry Orange, Sr. and the Port Lameron buyer were offering the same prices for fish. They joined forces to drive the new buyer out. This was accomplished by denying the 'delinquent' fishermen access to the essential resources such as gas and frozen bait which the buyers control. Through coercion, the buyers eliminated competition and reestablished the 'fixed' price. Today, the entire Pagesville-Port Lameron output is commanded by one company.

Through an examination of the catch records and expenses for two fishermen, a handliner and a longliner, it is possible to obtain some appreciation of harbour-level economics and the nature of the ties between the fishermen and the fish buyer (see Table 11).

Table 11
Catch Records, Expenses, Incomes¹¹

Fisherman A - Handliner

Year	Landed Value of Catch	Total Expenses	Portion of Expenses Paid to Buyer	Net Income
1971	3,941.18	676.01	658.76 (16.7% of the landed value)	3,138.15
1972	3,260.75	622.73	612.53 (18.7% of the landed value)	2,636.47
1973	5,939.67	742.18	705.84 (11.8% of the landed value)	5,338.30

Fisherman B - Longliner

1972	9,011.89	2,159.92	2,114.68 (23.5% of the landed value)	6,712.25
1973	11,292.02	2,661.97	2,610.81 (23.1% of the landed value)	8,618.65

Expenses are automatically deducted, on a daily basis, from the landed value of the catch. Depending upon the size of the amount owned, as much as twenty-five percent will be taken at dock side. All of the deductions, with the exception of Unemployment Insurance Commission payments, are costs incurred through the purchase, on credit, of items such as bait, gas, line, hooks, and clothing from the fish firm.

A sizeable portion of the landed value of the fishermen's catches is captured by the buyer's monopoly control of fishing supplies, gas, and frozen bait, all of which are

essential resources from the fishermen's point of view. For example, in 1972 most of the 18.7% (\$612.53) of the handliner's landed value went to the buyer to cover the costs of frozen bait and gas. In the same year, the longline fishermen lost 23.9% (\$2,114.68) of their landed value to similar expenses. Although the percentages of their landed values lost to expenses fluctuates to some degree each year, between fifteen and twenty-five percent of it is consumed through the purchase of the essential materials which are controlled by the fish buyer.

In a pattern typical of the 'truck system', the fishermen purchase materials on credit during the winter as they prepare for spring lobstering and summer fishing. Items such as lathes and twine needed for the construction of lobster pots can only be obtained from the fish buyers. Since their sole source of income during the winter is Unemployment Insurance benefits, the fishermen have no alternative but to charge many of these materials against the value of the spring and summer catches. Perhaps more significant is the buyers' control of the bait needed for lobstering and longlining. In communities such as Pagesville, only the fish buyers have been capable of generating enough capital to purchase and maintain the large freezers necessary to keep bait. By controlling the freezers, they control the bait and the fishermen's access to bait. The largest portion of the expenses

during the lobster seasons and for summer and fall longlining are composed of charges for bait against the landed value of the catches.

It is not feasible for the fishermen to drive out of the community to purchase some of the items sold by the fish firm. The frequency and immediacy of the need for such items as bait, netting, hooks, and lines means that it would cost the fishermen more in the long run to purchase the goods outside of the harbour if they do not have the means to buy in quantity and space to store the materials. Furthermore, the fashion in which they utilize time has important implications, as we have seen, in their attempts to maximize the chances of 'a good day's fishing'. They do not have the time to spare. However, this does not mean that the buyers are doing them a favour by offering the needed items for sale. To be sure, the fishermen find it convenient to have what they require within easy reach but the point is that each buyer has monopoly control over 'their harbours' and they take full advantage of the situation.

The fish buyers gain as much as twenty-five percent of the fishermen's landed value through their monopoly control of essential material resources. Through the extension of credit, they are able to bind the fishermen to them in an economic order dominated by seasonal debt. In my opinion, the 'truck system' is still operating in Pagesville today.

Harbour-level exchange appears to function in a manner which maximizes the value extracted from the fishermen's catch. This is accomplished through minimizing the fishermen's portion of the catch's real value while maximizing the percentage of the fishermen's landed value lost to the buyer's monopoly control of essential material resources. The overall effect of harbour-level exchange, from the fishermen's point of view, is the limitation on the producers ability to generate surpluses for reinvestment.

Within this context, it is interesting to note that the more capital intensive longline method appears to return a smaller net income per fisherman than does handlining. But, the landed value of the catches per producing unit is at least two times greater every season for longliners than it is for handliners. As Table 11 illustrates, in 1973 the two longline fishermen landed \$11,292.02 worth of fish and lobster. After expenses, however, they only realized a net income of \$4,309.32 per fisherman. The handliner, for the same year, had a landed value of only \$5,939.67 but he made \$5,338.30 after his expenses had been deducted. It appears as if inshore longlining ideally suits the function of harbour-level exchange as outlined above. Each producing unit realizes greater catches per worker than do the handline units, but, after expenses, the longline fishermen attain a net income similar to if not less than that made by the handliners.

The larger overhead in terms of expenses associated with longlining explains this situation. Although the fishermen realize much greater landed values, the method requires that they 'invest' a greater percentage of their landed values in materials such as frozen bait. Moreover, the percentage of the landed value captured by expenses appears to remain at a constant level regardless of seasonal fluctuations in the gross value of the catches. For example, the landed value of the longliner's catch was \$2,280.13 greater in 1973 than it was in 1972. But, their expenses increased in proportion to the increases in landed value. The handliner's expenses, on the other hand, captured the greatest percentage of the landed value during the poorest year (1972, 19%). They declined, as a constant percentage, as the landed value increased (see Table 11). It seems to me that these relationships indicate that longlining is characterised by closer economic ties between the fishermen and the fish buyer while the 'closeness of the fit' for handliners depends, to some degree, on the type of fishing season they are having. Needless to say, my sample is not large enough to permit me to make more definite statements.

By briefly examining the export value the buyers receive for unprocessed, semi-processed, and processed marine products as compared with the landed values the fishermen obtain, it is possible to gain a better idea of the manner

in which surplus value is further maximized within the context of the economy (see Tables 12-15).¹²

Table 12

Export Value (\$/lb.), Main Marine Species, 1967-73

Species	1967	1968	1969	1970	1971	1972	1973
Cod	0.278	0.282	0.292	0.32	0.39	0.456	0.54
Haddock	0.278	0.30	0.363	0.46	0.48	0.593	0.70
Lobster	0.87	0.95	1.02	1.12	1.25	1.54	1.62

Source: Annual Statistical Review of Canadian Fisheries, Environment Canada, Vols. 2-6.

Table 13

Landed Value (\$/lb.), Main Marine Species, 1967-73 (Nova Scotia)

Species	1967	1968	1969	1970	1971	1972	1973
Cod	0.05	0.05	0.05	0.06	0.06	0.07	0.10
Haddock	0.07	0.08	0.09	0.11	0.11	0.15	0.19
Lobster	0.75	0.69	0.78	0.91	0.98	1.29	1.27

Source: Annual Statistical Review of Canadian Fisheries, Environment Canada, Vols. 2-6.

Table 14

Landed Values as a Percentage of Export Values, 1967-73

Species	1967	1968	1969	1970	1971	1972	1973
Cod	18	18	17	19	15	15	19
Haddock	25	27	25	24	23	25	27
Lobster	86	73	76	81	78	84	78

Table 15

Percentage Increase in Landed Values Compared with Percentage Increase in Export Values, 1967-73

Species	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73
Cod						
a. landed	0.0	0.0	20.0	0.0	16.7	42.9
b. export	1.4	3.8	9.5	21.9	16.8	18.5
Haddock						
a. landed	14.3	12.5	22.2	0.0	36.4	26.7
b. export	8.4	21.0	26.7	4.4	23.5	18.0
Lobster						
a. landed	-8.0	13.0	16.7	7.7	31.6	-1.6
b. export	9.2	7.4	9.8	11.6	23.2	5.2

It is readily apparent that, except for lobster, fishermen receive a small fraction of the export value. The prices and percentages given for lobster only concern lobster that is exported fresh or frozen in the shell. Thus, there are not any costs to the buyers for processing. The only expenses incurred are for handling and transportation.

These figures reflect the very nature of harbour-level exchange in communities such as Pagesville. The most telling relationships are indicated in Tables 14 and 15. Although the fishermen's price has risen over the last seven years, their portion of the export value has generally decreased. Moreover, the rate of the increases in prices paid to the fishermen has been lower than rises in the export values obtained by the buyers/processors.

The rate of increase in the fishermen's price is periodically greater than that for export values. Between 1972-73 the fishermen's price increase exceeded that for export values in both cod and haddock products. However, these apparently sizeable increases did not dramatically alter the overall portion of the export value that the fishermen received. Rather, the fishermen's percentage of the export value returned to, in the case of cod, the 1970 level (19%), while, in the case of haddock, they 'regained' the 1968 percentage (27%). In other words, there have not been any real upward changes in the fishermen's share of the export value. To the contrary, the general trends suggest that through time the fishermen are receiving a decreasing percentage. The fishermen's share of the value of the fish product seems greater at dock side because of the relatively consistent rises in prices. It is, in fact, declining. The same trend has been emphasized by Faris and Antler (1973:9ff.) in a recent study of the economics of exchange in a Newfoundland fishing community. Fishermen are receiving higher dock side prices, but, overall, their portion of the export value is declining. In a very real sense, then, they are increasingly earning less through time for their productive activities.

These relationships reflect the nature of and dominant forces in fishermen-buyer relations and harbour-level economics. As argued previously, petty commodity producers

such as inshore fishermen and independent farmers cannot be considered, by any means, self-sufficient. The purpose of their labour is the production of commodities for exchange rather than subsistence. Inshore fishermen have always been fully integrated into the North American and international capitalistic market economy through their ties to and dependence on the harbour-based buyers as an outlet for their products and as a source of essential products.

Faris (1972:119) argues that in the Newfoundland outport the fish merchant realizes his ends through an adaptation to and utilization of the 'egalitarian moral order' of the community. Instead of overt action, the merchant exploits the producing population through a covert economic system of debt and obligation. Faris maintains that "...the specific relationship between any fisherman and the merchant...may be described as a dyadic contract" (ibid.:120) in arguing that the relationship must not be characterized as 'patron-client' in nature. Foster (1967:214) states that a "dyadic contract" is based on principles of reciprocity which "...underlies all formal ties, cross-cutting them at every point, serving as the glue that holds society together and the grease that smooths its running." A dyadic contract involves exchange relationships between two people or groups which can be classified into two general types: "colleague" contracts and "patron-client" contracts (ibid.:216).

"Patron-client" contracts...tie people...of significantly different socio-economic statuses (or order of power), who exchange different kinds of goods and services. Patron-client contracts are thus phrased vertically, and they can be thought of as asymmetrical, since each partner is quite different from the other in position and obligations (ibid.:216).

Certainly Faris does not believe that the colleague type of dyadic contract characterizes fishermen-merchant relations. He stipulates that:

... [the merchant's] skill in transforming, temporarily, the money owned him into "loyalty" or "respect," or at least an obligation to sell fish to him and avoid open criticism, is due to his willingness to supply on credit and faith and be discrete about the transaction, avoid criticising his debtors, and subscribe to the rules derived from the dynamics defining the morally active community (Faris 1972:121).

Here, he has characterized fishermen-buyer ties with the classical attributes of patron-client relationships (cf. Freeman 1972:34-35; Payne 1972:15; Wolf 1966:16-17). Payne (1972:18) argues that patrons strive to convert material assets into influence which is manifested in terms of the client's loyalty (p. 15) to the patron. Freeman (1972:35) notes that:

Because of his control over scarce and valued resources the patron is able in time to demonstrate his indispensability to the client. Once this power is recognized he is able to extract a prestation from the client more or less at will.

It seems to me that Faris (1972) is arguing that the merchants, by way of their control of essential resources, have built, maintained, and expanded their position through

an economic system of debt and a social system of obligation that is essentially based on patronage. In Pagesville the relationship between the fishermen and the buyer is purely economic in nature and based upon the buyer's control of essential resources within an economic zone of producing units fishing from a specific harbour. Earlier, we saw the course of action pursued by the Pagesville and Port Lameron merchants when their monopolistic position was threatened by an external competitor. The Port Lameron-Pagesville buying company is not particularly concerned with maintaining a 'social' image. Its owners/managers realize that the fishermen, given the existing economic situation, have no alternative but to sell their fish to them.

The Influence of Government Action

Over the last one hundred years, government, particularly the federal government, has played an important role in influencing 'developments' in the inshore fishery. Previously, I discussed the impact of the federal government's standards for the dried-salted fish product (Supra p. 45f.). This legislation removed control of processing from the hands of the fishermen and gave it to the fish buyers. Moreover, it eliminated the role of women's labour in production. Unfortunately, it seems as if most governmental policy, implemented for the 'benefit' of the fishermen and the fishery, has tended to have a similar effect.

Government legislation and programmes have either been directed towards intensifying the ties between the inshore fishermen and the harbour-based buyers or encouraging the development of a capital intensive offshore industry at the expense of the inshore fishery. Through these courses the government has led the movement to proletarianize inshore fishermen. The best examples of this intent are the discriminatory boat construction subsidy programmes and the Unemployment Insurance regulations as they apply to fishermen.

Government officials are not candid about the purpose of boat construction subsidies. In 1964, 35 to 45 foot boats became eligible for construction subsidization for the first time.

Subsidization of these smaller craft did enable many inshore fishermen to get more efficient and comfortable boats, but it ran counter to the primary objective of the program, which was to aid in the expansion and modernization of the Atlantic fishing fleet by helping inshore fishermen to move into employment in larger, more productive offshore fishing vessels....

The Fisheries subsidy policy erred in making 35 to 45 foot boats eligible for subsidy in 1964. In the light of the existing excess of men, boats, and gear in the inshore fisheries, subsidization of small craft detracted from the drive to channel labour and investment capital into the offshore fisheries (Mitchell and Frick 1970:v-vi).

In other words, the purpose of the federal boat subsidy programmes has been to stimulate the construction of wooden and steel hull offshore vessels and to discourage the construction of

the smaller boats used in the inshore fishery. With the encouragement of large processors, the federal and provincial governments have been striving to 'attract' fishermen from the labour-intensive, 'over-exploited' inshore fishery into the more productive, capital-intensive offshore industry by making it as difficult as possible for fishermen in small communities to work the inshore waters. In a general sense, this policy has meant active support of an economic system which constrains the fishermen's ability to generate surplus capital. By keeping the inshore fishermen financially insecure while at the same time financing the consolidation and expansion of the offshore fishery, the governments are attempting to drive these independent producers into offshore boats and wage labour.

At the same time, the existing Unemployment Insurance regulations function to reinforce and elevate the buyer's position while furthering the proletarianization of the inshore fishermen. The inshore fishermen depend upon Unemployment Insurance as their sole source of income during the winter season. The benefits, however, are calculated on the basis of sales to the buyer. Hence, the fishermen are caught in a position which requires them to sell their catches if they intend to receive unemployment benefits during the winter (Faris and Antler 1973:13). Thus the buyer is assured, through government action, of a steady supply of marine

products as the seasonal aspect of the fishery and the need to sell catches for winter benefits seriously erodes the ability of the fishermen to act collectively through strike action or other means in striving for higher prices. In this manner, the 'independent' inshore fishermen have virtually lost control of the products of their labour to the fish buyers. Amended in 1972, the Unemployment Insurance regulations very succinctly acknowledge the proletarianization of the fishermen.

193. (1) For all purposes of the Act and any regulation made thereunder, the employer of the fisherman shall be the person determined as such in accordance with this section.

(2) Where a fresh or cured catch is delivered in Canada to a buyer or a buyer's agent by a member of the crew that made the catch, in a declaration made pursuant to Section 199, the members of that crew are declared to share in the returns from the sale of the catch, the buyer shall be regarded as the employer of all fishermen who are members of that crew.

194. (2) Every employer shall keep and maintain all books, records, accounts and documents in respect of any fisherman of whom he is the employer separately from those he keeps and maintains in respect of the other insured persons (Amendment to the Unemployment Insurance Regulations, Canada Gazette, Part II, Vol. 106, No. 2, pp. 107-108).

In addition, Nova Scotia's labour laws "...continue to class them (fishermen) not as employees but as small entrepreneurs in partnership with the dominant companies and hence not eligible for the legal protection of union certification"

(Johnson 1972:150).

Summary

Statistical data presented in this chapter suggests that the mercantile 'truck system' economy, as previously described, is still operating in Pagesville. The fishermen depend upon the extension of credit from the harbour-based buyer to purchase essential materials. Furthermore, the fish firm has consolidated and strengthened this relationship through its control of necessary resources such as the bait, freezers, and gas. Consequently, the fishermen are economically tied to the local fish company which, as a result, provides their only link with the external market. The data indicate that this relationship tends to maximize the portion of the export value gained by the buyers while minimizing the fishermen's share. Although the fishermen are receiving higher prices at dock side, landed value as a percentage of export value, in fact, has decreased over the last seven years.

The federal government, through its policies and legislation, is directly assisting in the proletarianization of the inshore fishermen. On the one hand, it has reinforced and intensified the ties binding the fishermen to the fish buyer as illustrated in the Unemployment Insurance regulations. On the other hand, it is encouraging fishermen to leave the inshore fishery to work in the offshore industry as exemplified

in the boat subsidy programmes.

Further research on this complex topic is necessary before more definite conclusions can be made. The statistical, ethnographic, economic, and governmental data needed to establish these tendencies as empirical facts should be much more temporally comprehensive and specific than the information presented here. This is an area in which I intend to do extensive future research.

CHAPTER 6

Conclusion

This study has been concerned with a description and analysis of those ecological, economic, and historic processes which have fashioned the inshore fishermen's organization of production and market relations. A theoretical perspective grounded in cultural ecology and historical materialism has underlain the discussion and analysis of the data. This approach provides essential insights into diachronic and synchronic processes by emphasizing the importance of the relationship between ecological, economic, and historical variables in the formation, development, and maintenance of successful fishing strategies and intra-harbour market transactions.

The evolution and function of contemporary social formations are revealed by an examination of those factors most intimately concerned with production and economic relations. Cultural ecology, through the historical materialism implicit in its methodological approach, accomplishes this by paying "...primary attention to those features which empirical analysis shows to be most closely involved in the utilization of the environment in culturally prescribed

ways" (Steward 1955:37). Moreover, the ecological method emphasizes that social change is "...basically traceable to new adaptations required by changing technology and productive arrangements" (ibid.:37). In other words, social formations and culture change are the products of alterations in the manner in which culturally bound productive strategies define and use 'effective' environments. Implicit in this is the notion that people, through conscious action, may adapt to changing material conditions such as market relations by manipulating their productive articulation with the environment. This involves changes in the material means of production and the social organization of production.

Inshore fishing in Pagesville provides an excellent illustration of these relationships. For example, environmental factors, such as climate, proximity to good fishing grounds, and the availability of adequate harbours, offered optimum conditions for settlement and the development of the inshore fishery during the 18th century. However, the creation of a propertyless class in the New England colonies, the expulsion of the French, as competitors, from the North Atlantic fishery, and the preferred position of the 'shore' fishery vis-à-vis the 'green' fishery were the specific historic events which lead to human settlement and the exploitation of the marine environment in the Pagesville region. It was human action which defined those environmental

characteristics considered critical to the establishment of the fishery. In this sense, the environment can be viewed as a field in which games of decision and strategy take place.

Human action, however, is conditioned by those economic forces which specify desired resources and attach values to productive efforts. The Pagesville fishermen are knowledgeable about those ecological relationships which affect their access to commercially valuable species of fish. They use their understanding of the 'effective' environment in attempting to maximize their chances at 'a good day's fishing'. At the same time, the fishermen's social organization of production is a response to the need of minimizing risk. It offers them the means of adjusting to fluctuating ecological and economic conditions. For example, the reciprocal exchange of fresh herring can be viewed as an adaptation to the random occurrence of bait fish. This is also evident in the fishermen's information systems and their use of available labour resources.

Ecological relationships which govern the behaviour of desired marine species play a vital role in the fishermen's productive efforts. Their conscious awareness of species behaviour, marine food chains, the influence of climate, and the effect of changing water temperatures is constantly used in minimizing risk. This is reflected in the manner in

which they have organized their work and in the fashion in which they use the available technologies. For example, handliners strive to get their hooks in the water as soon after dawn as possible. As was shown, demersal fish return to bottom and begin feeding just before sunrise. By developing work patterns organized on an awareness of species behaviour, the fishermen have been able to use ecological relationships to their productive advantage.

Changes in the condition of the international market have resulted in several major alterations in the fishermen's organization of production and their articulation with the marine environment. The collapse of the dried-salt fish market was met by their adoption of the motor-powered Cape Island fishing boat. In this manner, the fishermen compensated for declining prices by expanding their range of exploitation and increasing their mobility, thereby enhancing their chances of having 'a good day's fishing'. The rise of lobstering is a product of the same kinds of processes.

Economic factors such as rising costs together with dwindling fish and lobster populations have led to a more intensive exploitation of the resource zone. This, in turn, has resulted in longliners fishing many sections of the grounds traditionally used by handliners. If this trend is not reversed competition may replace cooperation in inter-fishermen relations. Certainly, their notion of 'territoriality',

the feeling of ownership and control of a bounded resource zone, will increase in relation to further reductions in the catchable populations of fish and lobster.

Legislative and policy action on the part of the federal government has played a major role in directing change in the inshore fishery. The introduction of standards for dried-salt fish in 1928 removed control of processing from the fishermen and gave it to the fish buyers, thus reducing the fishermen's control of the fish product to 'from the water to the wharf' and eliminating the role of women's labour in the productive process. Boat subsidy programmes have tended to support the growth of the company controlled offshore fishery rather than assist the independent inshore fishermen. Hence, men who lack the financial resources to establish and maintain themselves in the inshore fishery are compelled either to join an offshore boat or to seek employment in urban-based industry. The unemployment insurance programme functions to tighten the bonds linking the inshore fishermen to the harbour-level buyers by basing the allocation of benefits on the landed value of the fishermen's catches. The fishermen are compelled to sell their catches for stamps if they wish to have access to the essential source of 'off-season' income. In short, the federal government has played a leading role in the proletarianization of the inshore fishermen.

The relationships between ecological, economic, and historical factors have shaped the inshore fishermen's organization of production and market relations. Needless to say, these same processes, in the form of decreasing fish and lobster stocks, governmental policies, and changing market conditions, are posing major problems in the economic well-being of inshore fishermen and the survival of the inshore fishing industry.

The research for this thesis is considered to be exploratory in nature. It is the initial phase of an ongoing project. The importance of preliminary research lies in the fact that it permits the researcher to formulate problems of a more specific character for detailed examination. A continuing study of the Nova Scotian inshore fishermen's mode of production can make several theoretical contributions to anthropology.

First, a more detailed study of independent commodity producers totally committed to the production of goods for an industrial economy may shed light on current theoretical concerns with defining peasantry, peasant-type economic systems, and the appropriateness of applying analytical concepts grounded in peasant studies to the organization of life in the inshore fishing community (cf. Foster 1967b; Wolf 1966b). Foster (1967b:6) notes that:

It is not what peasants produce that is significant; it is how and to whom they dispose of what they produce that counts. When settled rural peoples subject to the jural control of outsiders exchange a part of what they produce for items they cannot themselves make, in a market setting transcending local transactions, then they are peasants.

Although the Nova Scotian inshore fishermen are rural producers, the sole purpose of their productive activity is to provide, in exchange for money, the North American industrial-commercial market with a valuable foodstuff. Very little, if any, of the products of their labour can be thought of as directly subsistence oriented. Inshore fishermen and North American farmers fall into the same category as producers. As Foster (1967b:7) states:

American farmers, even prior to the introduction of elaborate machinery, were not peasants; although they grew a good deal of what they ate, they were oriented toward a market economy, fluctuating prices, and supply and demand.

As emphasized in the body of this study, inshore fishing in the Pagesville area has developed in response to factors influenced by international markets. The orientation of production is to provide commodities for an industrial market. From Foster's perspective, then, the inshore fishermen are not peasants.¹³

However, the majority of the researchers dealing with North Atlantic inshore fishermen have used conceptual frameworks and analytical approaches grounded in the study of peasant societies (cf. Breton 1973; Faris 1972; Firestone 1967;

Nemec 1972). On the basis of my study I suggest that these approaches may be inappropriate: they lead to possible misinterpretations of the economic, social, and ideological arenas of the people living in outport fishing communities. Further research in this area would clarify the situation as well as contribute to the theoretical discussion concerning peasantries.

Secondly, a more detailed study of the inshore fishermen's mode of production would contribute to the current debate concerning the appropriateness of a dogmatic Marxian analysis versus the approach taken by some cultural ecologists in explaining the generation and function of social formations. Friedman (1974:456-457), refers to cultural ecology as 'vulgar materialism'.

Vulgar materialism, mechanical materialism, and economism are terms which refer to a simplistic kind of materialism, rejected by Marx, which envisages social forms as mere epiphenomena of technologies and environments, either by direct causation or by some economic rationality which makes institutions the products of social optimisation. This approach has made its appearance in the form of...neo-functional ecology and cultural materialism.

He characterizes the ecological approach as either pure functionalist description or "...basically a description of imaginary relations, where the 'function' is assumed rather than demonstrated" (ibid.:457).

In the body of this study, the inshore fishermen's mode of production was shown to be the product of the dynamic relationship between economic, historical, and ecological

factors. Dogmatic Marxists criticize the ecological approach for being functionalist, yet, at one level, the Marxist method of analysis is classically functionalist, dealing with the fashion in which the various parts of a culture are inter-related (cf. Friedman 1974; Terray 1972). In fact, the dialectical method is based on functional and processional interrelationships. Perhaps critics are correct in their criticism of those ecological studies which do not attempt to deal with culture change (cf. Rappaport 1967). However, dogmatic Marxist arguments seemed to be based on a very selective reading of ecological works. Steward (1955) and Netting (1968), for example, have presented positions, using historical materialism, which explain culture change as a product of alterations in the relation between culturally defined environments and productive strategies. Moreover, the alterations are seen as the result of the operation of such economic forces as changes in the relations between producers, in access to resources, and in the availability of labour. Further research on changes in the inshore fishermen's mode of production may contribute to the clarification of these positions.

Notes

¹The unusually high amounts of rainfall measured for some summer months such as August, 1971 and July, 1973 are the result of severe rainstorms. For example, 4.95 inches of rain fell on August 15, 1971 and 1.27 inches fell on July 26, 1973. The general trend for rainfall patterns in this area during the summer months is for the greatest percentage of the monthly total to fall on a limited number of days.

²Chapter 4 contains a more detailed discussion of the relationship between sea bottom topography, marine ecology, and their effect on the inshore fishermen's organization of production.

³For a more detailed discussion of French settlement in the Cape Sable area see D'Entremont (1967).

⁴See Innis (1954) for a more comprehensive treatment of these events.

⁵Brebner (1931:315) notes that:

The Cape Sable shore presented the economic situation most comprehensively, for that region had been closely affiliated with Massachusetts for a century and a half and had never made more than the barest acknowledgements of Halifax rule.

⁶The 1971 figures were obtained from the municipal offices located in Barrington, Shelburne County. Unfortunately, the census publications ceased giving population figures for each sub-district in 1951.

⁷The population figures for each of the communities on the Pagesville peninsula were obtained from the municipal offices located in Barrington, Shelburne County.

⁸The composition and structure of this figure is based on information presented in Moiseev (1971).

⁹The composition and structure of this is based, in part, on information presented in Miller, Mann, Scarrat (1971). The position of the catfish in the system is based on information obtained from the fishermen and presented in Wheeler (1969).

- 10 Source: Catch and expenses slips given to the fishermen by the fish company and the daily records kept by the fish buyer of purchased weights by species.
- 11 Source: Catch and expenses slips given to the fishermen by the fish firm each 'fishing' day after the catches have been weighted, values given, and deductions made.
- 12 The export values for marine products sent to the United States will serve as the base-line. Over 50% of all Canadian marine production is marketed in the United States. The international exchanges for fresh and dried-salt fish are located in Boston (fresh) and New York (dried-salt). The price that the fishermen receive and the price that the consumer pays is determined, to a large degree, by the transactions occurring in these centres. All of the Pagesville production is exported to the United States.

Export Values (\$,000) by Country

	1968	1969	1970	1971	1972	1973
Total Export Values	257,951	279,140	280,022	294,731	350,420	498,706
United States						
a. value	174,031	188,326	202,316	201,405	229,670	294,066
b. % of total	67	67	72	68	66	59

Source: Annual Statistical Review of Canadian Fisheries. Department of the Environment. Vols. 2-6. Ottawa: Queen's Printer.

- 13 There are many definitions of peasants used in the literature. Wolf (1966b), for example, reserves the category for cultivators, intentionally excluding fishermen. Foster's definition of peasantry is one of the most inclusive and general, yet the Nova Scotian inshore fishermen do not even seem to meet his criteria.

References Cited

- Acheson, James M.
1972 Territories of the Lobstermen. *Natural History*.
April 8(4):60-69.
- Anderson, R.
1972 Hunt and Deceive: Information Management in Newfoundland
Deep-Sea Trawler Fishing. In *North Atlantic Fishermen:
Anthropological Essays on Modern Fishing*. R. Anderson
and C. Wadel, eds., Newfoundland Social and Economic
Papers No. 5. Toronto: University of Toronto Press.
- Anderson R. and C. Wadel
1972 Comparative Problems in Fishing Adaptations.
*In North Atlantic Fishermen: Anthropological Essays
on Modern Fishing*. R. Anderson and C. Wadel,
eds., Newfoundland Social and Economic Papers
No. 5. Toronto: University of Toronto Press.
- Barnes, J.A.
1954 Class and Committees in a Norwegian Island Parish.
Human Relations 7:39-58.
- Barth, F.
1966 Models of Social Organization. *Royal Anthropological
Institute Occasional Papers*, No. 23.
- Beverton, R.J.H. and A.J. Lee
1965 The Influence of Hydrographic and Other Factors on
the Distribution of Cod on the Spitsbergen Shelf.
*International Commission for the Northwest Atlantic
Fisheries, Special Publication No. 6*. ICNAF Environmental
Symposium. Dartmouth: Kentville Publishing Co.
pp. 225-245.
- Bottemanne, C.J.
1959 Principles of Fisheries Development. Amsterdam:
North-Holland Publishing Company.
- Bowles, Francis P.
1973 The Fisherman As Predator: The Role of Lobster
Fishermen in a Marine Ecosystem. Unpublished
manuscript.

- Brebner, John Bartlet
 1937 The Neutral Yankees of Nova Scotia: A Marginal Colony During the Revolutionary Years. New York: Columbia University Press.
- Breton, Yvan
 1973 A Comparative Study of Work Groups in an Eastern Canadian Peasant Fishing Community: Bilateral Kinship and Adaptive Processes. *Ethnology* 12(4): 393-418.
- Brookes, Ian
 1972 The Physical Geography of the Atlantic Provinces. *In* The Atlantic Provinces. A.G. MacPherson, ed. Toronto: University of Toronto Press.
- Brunel, Pierre
 1965 Food as a Factor or Indicator of Vertical Migration of Cod in the Western Gulf of St. Lawrence. International Commission for the Northwest Atlantic Fisheries, Special Publication No. 6. ICNAF Environmental Symposium. Dartmouth: Kentville Publishing Co. pp. 439-448.
- Buzzati-Traverso, A.A. (ed.)
 1960 Perspectives in Marine Biology. Berkeley: University of California Press.
- Clark, Andrew Hill
 1968 Acadia: The Geography of Early Nova Scotia to 1769. Madison: The University of Wisconsin Press.
- Cleavercy, Kenneth J.
 1973 A Brief History of the Fishing Industry of Nova Scotia. unpublished manuscript.
- Clibbon, Peter B. and Louis E. Hamelin
 1968 Landforms. *In* Canada: A Geographical Interpretation. John Warkentin, ed. Toronto: Methune. pp. 57-77.
- Crowell, Edwin
 1928 A History of Barrington Township and Vicinity. Yarmouth, Nova Scotia.
- Davenport, William
 1960 Jamaican Fishing: A Game Theory Analysis. Yale University Publications in Anthropology 59. New Haven: Yale University Press.
- D'Entremont, Pere Clarence J.
 1967 Le Cap Sable: Ses Etablissements Acadiens Avant La Dispersion. *La Societe Historique Acadienne* 2:163-176.

Department of the Environment

1967-73 Annual Statistical Review of Canadian Fisheries.
Vols. 2-6. Ottawa: Queen's Printer.

Department of Transport

1971-73 Monthly Record: Meteorological Observations in
Canada. Meteorological Branch. Toronto: Queen's
Printer.

Dow, R.L.

1969 Cyclic and Geographic Trends in Sea-Water Temperature
and Abundance of American Lobster. Science 164:
1060-1063.

Erskine, David

1968 The Atlantic Region. In Canada: A Geographical
Interpretation. John Warkentine, ed. Toronto:
Methune. pp. 231-280.

Faris, James C.

1972 Cat Harbour: A Newfoundland Fishing Settlement.
Newfoundland Social and Economic Studies No. 3.
Toronto: University of Toronto Press.

Faris, James C. and Ellen Antler

1973 Adaptation To Changes In Technology and Government
Policy: A Newfoundland Example (Cat Harbour).
Paper prepared for the IXth International Congress
of Anthropological and Ethnological Sciences.
unpublished manuscript.

Firestone, Melvin M.

1967 Brothers and Rivals: Patrilocality in Savage Cove.
Newfoundland Social and Economic Studies No. 5.
Institute of Social and Economic Research.
St. John's: Memorial University of Newfoundland.

Firth, Raymond

1966 Malay Fishermen: Their Peasant Economy. 2nd
edition. London: Routledge and Kegan Paul.

Forman, Shepard

1970 The Raft Fishermen: Tradition and Change in the
Brazilian Peasant Economy. Bloomington: Indiana
University Press.

Foster, George M.

1967 The Dyadic Contract: A Model for the Social Structure
of a Mexican Peasant Village. In Peasant Society:
A Reader. Jack M. Potter, May N. Diaz, and George
M. Foster, eds. Boston: Little, Brown and Company.
pp. 213-230.

- Foster, George M.
 1967b Introduction: What is a Peasant? In Peasant Society: A Reader. Jack M. Potter, May N. Diaz, and George M. Foster, eds. Boston: Little, Brown and Company. pp. 2-15.
- Freeman, Milton
 1972 Tolerance and Rejection of Patron Roles in an Eskimo Settlement. In Patrons and Brokers in the East Arctic. R. Payne, ed. Newfoundland Institute of Social and Economic Research. Toronto: University of Toronto Press. pp. 34-54.
- Friedman, Jonathan
 1974 Marxism, Structuralism, and Vulgar Materialism. Man 9(3):444-469.
- Goodlad, C.A.
 1972 Old and Trusted, New and Unknown: Technological Confrontation in the Shetland Herring Fishery. In North Atlantic Fishermen: Anthropological Essays on Modern Fishing. R. Anderson and C. Wadel, eds. Newfoundland Social and Economic Papers No. 5. Toronto: University of Toronto Press.
- Government of Canada
 1870-71 Census of Canada. Population. Vol. 1.
 1870-71 Census of Canada. Occupation. Vol. 3.
 1880-81 Census of Canada. Population. Vol. 1.
 1880-81 Census of Canada. Occupation. Vol. 3.
 1890-91 Census of Canada. Population. Vol. 1.
 1901 Census of Canada. Population. Vol. 1.
 1911 Census of Canada. Population. Vol. 1.
 1921 Census of Canada. Population. Vol. 1.
 1931 Census of Canada. Population. Vol. 1.
 1941 Census of Canada. Population. Vol. 1.
 1963 Fisheries Act: Lobster Fishery Regulations. Canada Gazette, Part II 97:567-574.
 1972 Unemployment Insurance Regulations, amendment. Canada Gazette, Part II 106:102-113.
- Grant, Ruth Fulton
 1934 The Canadian Atlantic Fishery. Toronto: The Ryerson Press.

- Halifax Chronicle Herald
1959 First to Build Cape Sable Boats. May 2:5.
- Halifax Herald
1910 The Lobster Fishery on the Shelburne Coast. December 15.
- Horsted, S.A. and Erik Smidt
1965 Remarks on Effect of Food Animals on Cod Behaviour. International Commission for the Northwest Atlantic Fisheries, Special Publication No. 6. ICNAF Environmental Symposium. Dartmouth: Kentville Publishing Co. pp. 435-437.
- Innis, Harold A.
1934 Editor's Preface. In The Canadian Atlantic Fishery. Toronto: The Ryerson Press. pp. vii-xxi.
1954 The Cod Fisheries: The History of an International Economy. Toronto: The Ryerson Press.
- Johnson, Leo A.
1972 The Development of Class in Canada in the Twentieth Century. In Capitalism and the National Question. G. Teeple, ed. Toronto: University of Toronto Press. pp. 141-185.
- Junek, Oscar W.
1937 Isolated Communities: A Study of a Labrador Fishing Village. New York: American Book Company.
- Laevastu, T.
1965 Interpretation of Fish Distribution in Respect to Currents in the Light of Available Laboratory and Field Observations. International Commission for the Northwest Atlantic Fisheries, Publication No. 6. ICNAF Environmental Symposium. Dartmouth: Kentville Publishing Co. pp. 249-256.
- Mackinnon, Ian F.
1930 Settlement and Churches in Nova Scotia 1749-1776. Montreal: The Walker Press Limited.
- Mann, K.H. and P.A. Breen
1972 The Relation Between Lobster Abundance, Sea Urchins, and Kelp Beds. Journal of Fisheries Research Board of Canada. 29:603-609.
- Miller, R.J., K.H. Mann, and D.J. Scarrat
1971 Production Potential of a Seaweed-Lobster Community in Eastern Canada. Journal of the Fisheries Research Board of Canada 28:1733-1738.

- Mitchell, C.L. and H.C. Frick
1970 Government Programs of Assistance for Fishing Craft Construction in Canada: An Economic Appraisal. Canadian Fisheries Reports No. 14. Economics Branch. Fisheries Service. Department of Fisheries and Forestry. Ottawa: Queen's Printer.
- Mohr, H.
1965 Changes in the Behaviour of Fish Due to Environment and Maturation and Their Influence on Fishing. International Commission for the Northwest Atlantic Fisheries, Publication No. 6. ICNAF Environmental Symposium. Dartmouth: Kentville Publishing Co. pp. 775-779.
- Moiseev, P.A.
1971 The Living Resources of the World Ocean. N. Kaner and W.E. Ricker, translation. Jerusalem: Keter Press.
- Murdock, Beamish
1866 A History of Nova Scotia or Acadia. Volume II. Halifax: James Barnes, Printer and Publishers.
- Naylor, R.T.
1972 The Rise and Fall of the Third Commercial Empire of the St. Lawrence. In Capitalism and the National Question. G. Teeple, ed. Toronto: University of Toronto Press. pp. 1-43.
- Nemec, Thomas F.
1972 I Fish With My Brother: The Structure and Behaviour of Agnatic-Based Fishing Crews in a Newfoundland Irish Outport. In North Atlantic Fishermen: Anthropological Essays on Modern Fishing. R. Anderson and C. Wadel, eds. Newfoundland Social and Economic Papers No. 5. Toronto: University of Toronto Press.
- Netting, Robert McC.
1968 Hill Farmers of Nigeria: Cultural Ecology of the Kofyar of the Jos Plateau. Seattle: University of Washington Press.
- Nietschmann, Bernard
1972 Hunting and Fishing Focus Among the Miskito Indians, Eastern Nicaragua. Human Ecology 1(1):41-67.
1973 Between Land and Water: The Subsistence Ecology of the Miskito Indians, Eastern Nicaragua. New York: Seminar Press.
- Nikolsky, G.V.
1963 The Ecology of Fishes. London: Academic Press.

- Nova Scotia Department of Trade and Industry
n.d. Historic Nova Scotia. Halifax: Queen's Printer.
- Payne, Robert
1972 A Theory of Patronage and Brokerage. In Patrons and Brokers in the East Arctic. R. Payne, ed. Newfoundland Institute of Social and Economic Research. Toronto: University of Toronto Press.
- Porter, Philip W.
1965 Environmental Potentials and Economic Opportunities: A Background for Cultural Adaptation. American Anthropologist 67:409-420.
1970 The Concept of Environmental Potential as Exemplified By Tropical African Research. In Geography and a Crowding World: A Symposium on Population Pressures Upon Physical and Social Resources in the Developing Lands. W. Zelinsky, L.A. Kosinski, and R.M. Prothero, eds. London: Oxford University Press.
- Rappaport, Ray
1968 Pigs for the Ancestors. New Haven: Yale University Press.
- Report of the Canadian Lobster Commission
1898 Nova Scotia Provincial Archives. Halifax: Queen's Printer.
- Sahlins, Marshall D.
1965 On the Sociology of Primitive Exchange. In The Relevance of Models for Social Anthropology. M. Banton, ed. Monograph 1. London: Tavistock Publications. pp. 139-227.
- Steward, Julian H.
1955 Theory of Culture Change: The Methodology of Multilinear Evolution. Urbana: University of Illinois Press.
- Stiles, R.G.
1972 Fishermen, Wives and Radios: Aspects of Communication in a Newfoundland Fishing Community. In North Atlantic Fishermen: Anthropological Essays on Modern Fishing. Newfoundland Social and Economic Papers No. 5. Toronto: University of Toronto Press.
- Swim, W.A.
n.d. Down Shore Tales. Nova Scotia Provincial Archives. Unpublished manuscript.

- Templeman, Wilfred and P. Flemming
 1965 Some Instances of Cod and Haddock Behaviour and Concentrations in the Newfoundland and Labrador Areas in Relation to Food. In International Commission for the Northwest Atlantic Fisheries, Special Publication No. 6. ICNAF Environmental Symposium. Dartmouth: Kentville Publishing Co. pp. 449-461.
- Terray, Emmanuel
 1972 Marxism and "Primitive Societies." New York: Monthly Review Press.
- Tunstall, Jeremy
 1964 The Fishermen: The Sociology of an Extreme Occupation. London: MacGibbon and Kee.
- Wadel, Cato
 1972 Capitalization and Ownership: The Persistence of Fishermen Ownership in the Norwegian Herring Fishery. In North Atlantic Fishermen: Anthropological Essays on Modern Fishing. R. Anderson and C. Wadel, eds. Newfoundland Social and Economic Papers No. 5. Toronto: University of Toronto Press.
- Ward, Barbara E.
 1965 Varieties of the Conscious Model: The Fishermen of South China. In The Relevance of Models for Social Anthropology. M. Banton, ed. A.S.A. Monographs 1. London: Tavistock Publications. pp. 113-137.
- Watts, F.B.
 1968 Climate, Vegetation, Soil. In Canada: A Geographical Interpretation. John Warkentin, ed. Toronto: Methune.
- Wheeler, A.
 1969 The Fishes of the British Isles and North-West Europe. London: MacMillan and Co., Ltd.
- Wilder, D.G.
 1958 Canada's Lobster Fishery. Environment Canada. Department of Fisheries. Ottawa: Queen's Printer.
 1973 The American Lobster. Fisheries Fact Sheet. Environment Canada. Ottawa: Queen's Printer.
- Wolf, Eric R.
 1966 Kinship, Friendship, and Patron-Client Relations in Complex Societies. In The Social Anthropology of Complex Societies. M. Banton, ed. A.S.A. Monograph 4. London: Tavistock Publications. pp. 1-20.

Wolf, Eric R.

1966b Peasants. Englewood Cliffs: Prentice-Hall Inc.

Woodhead, P.M.J.

1965 Effects of Light Upon Behaviour and Distribution of Demersal Fishes of the North Atlantic. In International Commission for the Northwest Atlantic Fisheries, Special Publication No. 6. ICNAF Environmental Symposium. Dartmouth: Kentville Publishing Co. pp. 267-287.