

maritime anthropological studies

MAST

Vol. 1(2) 1988

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MAST (Maritime Anthropological Studies) is an international journal of anthropology on fishing and maritime communities. Published twice yearly by the Department of European and Mediterranean Studies (Euromed) at the University of Amsterdam, the Netherlands, **MAST** aims to disseminate knowledge of contemporary and historical societies and cultures of people exploiting maritime environments.

Articles, comments, books for review, and business correspondence should be addressed to:

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Subscription price per volume (including postage): private individuals Dfl. 35.00 (US\$ 18.50), and institutions, libraries, etc. Dfl. 70.00. (US\$ 37.00). Please transfer the amount in Dfl. or US\$ to our postal giro account no. 3691970 or to J. Verrips/MAST, ABN Bank account no. 545446406, Amsterdam, the Netherlands, or pay with International Money Order.

Typists: *Hannie Hoekstra & Nettie Westerhuis*

Cover design: *Yvon Schuler*

Printed by Krips Repro, Meppel, The Netherlands

ISSN: 0922-1476

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Maritime Anthropological Studies

Vol.1, No. 2

1988

Contents

EDITORIAL	79
USUFRUCT AND CONTRADICTION: TERRITORIAL CUSTOM AND ABUSE IN NEWFOUNDLAND'S BANKS SCHOONER AND DORY FISHERY	81
<i>Raoul Andersen</i>	
JOB SATISFACTION AND THE CULTURE OF FISHING: A COMPARISON OF SIX NEW JERSEY FISHERIES	103
<i>John B. Gatewood & Bonnie J. McCay</i>	
GOING OUT OR STAYING HOME: MIGRATION STRATEGIES AMONG XWLA AND ANLO-EWE FISHERMEN	129
<i>Paul Jorion</i>	
REGULATION OF COMMERCIAL SALMON FISHING IN SOUTHERN NEW BRUNSWICK	156
<i>Gail R. Pool & Frances L. Stewart</i>	
THE BAYMEN OF THE GREAT SOUTH BAY, NEW YORK: A PRELIMINARY PROFILE	182
<i>Jeffrey Kassner</i>	
SHRIMPERS AND TURTLES ON THE GULF COAST: THE FORMATION OF FISHERIES POLICY IN THE UNITED STATES	196
<i>E. Paul Durrenberger</i>	
ANNOUNCEMENT	215
BOOKS RECEIVED	217

Editorial

This second issue of MAST contains six articles. It addresses problems of customary rights, job satisfaction, migration strategies, and resource management in fishing. The regional emphasis is on the East Coast of North-America, while one paper pertains to West-Africa.

In his paper on Newfoundland's banks schooner and dory fishermen, Raoul Andersen draws relationships between material and reputational rewards, usufruct customs (and their violation), and risk taking in this fishery. More specifically, Andersen compares the two basic incentive schemes used in these fishing operations, viz. the 'count' and the 'share.' He points out that the count reward scheme plays an important role in occupational hazards.

John Gatewood and Bonnie McCay present a quantitative analysis of job satisfaction in different categories of New England commercial fishermen. They compare clammers, scallopers, oystermen, draggers, longliners, and baymen with regard to thirty-three components of job satisfaction. Though all fishermen find their work intrinsically rewarding, there are also important group-group and intra-crew contrasts with respect to job satisfaction.

Paul Jorion describes the risk-minimizing, seasonal movement, and migration strategies of fishermen in the Gulf of Guinea (West-Africa). He compares two beach settlements of different ethnic groups in the P.R. Bénin with respect to their fishing policies. The majority of fishermen of 'Zogbèdji-beach' have opted for seasonal movements. Those of the 'Adounko-beach' settlement of Akpanji have chosen migration to Gabon and the Congo. Jorion outlines the reasons underlying these diverging strategies and concludes his paper with a sociological 'law.'

In their joint paper, Gail Pool and Frances Stewart take up the issue of government regulation of salmon fishing in New Brunswick. They consider the ecological, economic, and social effects of limited entry measures and describe the response of Chance and Dipper Harbours fishermen to this resource management strategy. Pool and Stewart argue that the introduction of limited access was accompanied by many problems, mainly because the managers overlooked the socio-economic context of fishing a mobile resource.

Jeffrey Kassner, a shellfish biologist, says that since the 'baymen' of the Great South Bay 'prey' upon hard clams, they are predators amenable to an ecological analysis. This approach can provide important insights in ecological processes of predation, competition, and adaptation from the perspective of the baymen. He maintains that this approach may lead to a better understanding of the behavior of fishermen and is therefore useful in formulating adequate management policies.

Paul Durrenberger pays attention to fisheries policy in the United States. He focuses on the introduction of turtle excluder devices (TEDs) in the Alabama shrimp fishery. His detailed case study provides an example of the complexities of fisheries regulations and shows how these regulations can influence the livelihoods of different categories of people. Durrenberger stresses the necessity to understand commercial fisheries in their broadest political and economic contexts.

Usufruct and Contradiction

Territorial Custom and Abuse in Newfoundland's Banks Schooner and Dory Fishery¹

Raoul Andersen

Memorial University of Newfoundland

Introduction

Newfoundland's banks or "deep sea" schooner and dory fishery was displaced by modern groundfish trawler operations in the mid-1950's. Yet its organization remains superficially understood and fragmentary described. This paper draws upon information from published and archival sources, especially those at the Memorial University of Newfoundland's Centre for Newfoundland Studies, and oral historical data about the schooner fishery gathered by the author since about 1967.

In 1967-68 I went to sea with many ex-banks schooner fishermen who were then engaged in groundfish trawling. Over the years I came to know and interview about twelve former schooner captains and about fifty or more ex-dory fishermen. The principal oral historical data for this essay, however, are drawn from the biographical recollections of a particularly authoritative Newfoundland banks schooner master. Information from other men interviewed is used where appropriate. Particular attention is upon my primary informant's recollections of skipper and dory fisherman decisions about territorial use by schooners and dory units.

I will attempt to draw relationships between material and reputational rewards, usufruct customs, their violation, and risk taking in these fishing operations. In this regard, I examine some important consequences of fishing on the 'count' and (average) 'share' schemes, the two major incentive arrangements used in this fishery.

The following discussion therefore bears on an understanding often expressed by Newfoundland's retired banks schooner fishermen that "there were lives and lives lost" in this fishery. In addition to the wholesale destruction of schooner crews in various vessel disasters, perhaps every fisherman I interviewed remembered occasions when individual dory crews were lost, "gone astray." Countless were never seen again. Such strays are usually attributed mainly to storms, errors in seamanship, and men losing their way in dense fog. This oversimplifies the past. One must also recognize how material and reputational incentives helped to shape such events. We will consider the wisdom of the established Newfoundland banks fisherman belief that the 'count' both compelled men to work hard and killed them.

Banks Fishing in Historical and Structural Context

The Newfoundland-based, merchant-capitalist inspired offshore or 'banks'-schooner and dory (also 'banking schooner') fishery is a late nineteenth and early twentieth century development. Newfoundland's fishery was predominantly shore-based and dependent upon inshore and nearshore grounds until well into this century. This was true from the earliest migratory summer cod fisheries undertaken by chartered British, especially West Country (Cornwall, Devon, Dorset, and Somerset) firms, through the establishment and failure of plantations, to modern trawling in the late 1940's.

Early English government policy sought to retard Newfoundland's colonization. Annually men were sent from England to join a small resident population in a summer fishery. They crewed open, 6-men shallots that fished inshore grounds and landed almost daily. They dried their catch ashore for export during the period from about 1600 to the early nineteenth century in what may be termed a "servant" fishery (at risk of overgeneralizing, "family," and "factory" fisheries came later; for example, see Sider 1976:105-12). The outer banks were left especially to France, Portugal, and Spain.

Despite initial government policy and some English West Country merchants' efforts to restrict settlement, small settler communities gradually spread around the island. Merchant capitalists readapted, proliferated, and found it profitable to obtain their cod supply from sedentary fishermen. In the eighteenth century fifty- to one-hundred-ton square-rigged English vessels gradually "turned their attention to the offshore banks and the catch, instead of being cured on shore, was salted down aboard ship and taken back to England as 'green' fish" (Story 1969:7; see also Fay 1956:138-39). Story reckons that this shift to the offshore banks "... removed the visiting fishermen from direct and continuous conflict with the settlers" for fishing premises and timber. After 1730 it seems there was little conflict between settlers and migratory English fishermen.

Various political and economic changes undermined the migratory English ship fishery as the eighteenth century closed, and it had ceased by 1840 (Matthews 1986:600; 1973:176-85, 228-33). By this time St. John's and its merchants were increasingly dominating the colony's economic and political life. It gained representative government by 1832, and Newfoundland-based sedentary and migratory cod fishing, sealing, and shipping industries developed. Population grew and new settlements appeared along the island and Labrador coasts. Many such new settlements or 'outports' were established on Newfoundland's south coast in the late eighteenth and early nineteenth centuries. The south coast is noteworthy as the only area of the province's coast normally free of ice the year round. It was primarily in communities along this coast that deep sea or banking schooner- and, later, trawler-fisheries developed.

The Offshore or 'Banks' Fishery

What many people today refer to as Newfoundland's "traditional" deep sea

fishing communities (e.g., Belleoram, Fortune, Grand Bank, and Burin), all located on Newfoundland's south coast, were originally inshore and nearshore banks fishing settlements. They became offshore fishing centers only in the late nineteenth century or even later. A strong push to compete, perhaps especially with France, for cod out on the Grand Banks began in the 1880's.

Encouraged by government subsidies, Newfoundland's merchants gradually built and bought fleets of increasingly large (up to 150 ton) dory fishing schooners. They were equipped from seven to eleven (or even 20) dories, and crewed by up to about 25 men. Some carried 27 men. Their vessels were capable of "deep water" fishing - usually to about 50 fathoms, as on the Grand Bank. But they fished waters ranging in depth from about five or six (e.g., the eastern shoals and off Labrador) to 100 fathoms (e.g., the grounds off southwest Newfoundland), for weeks at a time. (By contemporary standards, of course, this was closer to our notion of a "middle distance" fishery.)

Smaller dory schooners, or 'jack' boats and 'western' boats, often fishermen-built and owned, of from about 18 to 25 tons, were already well established in the Newfoundland fishery. Equipped with from one to about four dories, and crews of from three to about eleven men, they generally fished the banks near shore (Martin 1938:118) and made port daily.

These large and small schooners used the same catching technology, especially the long trawl or bultow, set from dories (and from the schooner itself in the case of small schooners). Each two man dory normally carried 40 lines of gear, each line 45 fathoms long, with approximately 75 sudlines ('seds'), and a hook on each sudline (cf. Smallwood 1984 II:165). When set, the gear might reach over a mile in length. Handlines and seine nets were also used when needed, as for bait when other sources of supply were unavailable.

The shift to offshore banks fishing was gradual, rather than dramatic or "revolutionary" in respect to change in fishing and sailing technological kit and scale. Aggregate fisheries data in official documentary sources from the 1880's and later often do not distinguish the small from the larger vessel operations conducted from the key banks ports. But these same data do clearly indicate a gradual growth in average schooner tonnage and decline in total vessel numbers. But when my fisherman informants and other older south coast people speak of the dory schooner banks fishery, 'bankers,' 'banking,' and 'bankermen,' they generally refer to the large schooner phase in the province's recent fishery history. The organization of this fishery is the focus of the following discussion.

Newfoundland's banking schooner fishery operated primarily from south coast ports, especially in Fortune Bay and on the Burin Peninsula, from about 1880 to 1955, when the last salt-fish banker made its final journey to the banks. The personal experience of my informants with this fishery especially covers the period from about 1900, arrival of groundfish trawlers in the late 1940's, to the last banking schooner activity in the 1950's.

During this period the bankers produced primarily "green" or wet salted cod. Aboard the schooner, after being gutted, headed, split, and having the backbone



Plate 1. Two-man dory crew from Nova Scotian schooner Fairmorse make for their trawl buoys to retrieve catch (Source: Cyril Robinson, "Deep Sea Fishermen." *The Standard* (Montreal), May 14, 1949).

removed, the fish was stowed under heavy salt (and became 'salt-bulk'). Upon landing in port some was exported in salt-bulk form. But most was washed and sun-cured on flakes and beaches along the coast. Mechanical driers were first used in the area by Nova Scotian plant operators. Artificial drying began in Newfoundland in about 1947 at the south coast banks fishing port of Fortune (Smallwood 1984 II:120). The finished product was shipped to southern European, Latin American, and West Indies markets (see Alexander 1977, for a discussion of this saltfish trade in the twentieth century).

Schooner Ownership

The schooners or 'bankers' were owned by local merchants, although they were often financially beholden to Water Street merchants in St. John's. Some schooner owners had first accumulated capital as successful fishing skippers and traders, and some continued going to sea after becoming owners. Creation of a banking firm usually led to broader merchant activity, however, especially trade with area fishermen.

By the second generation, the successful merchant had a small fleet of schooners, a clientage of fishermen aboard and ashore and their families to supply and

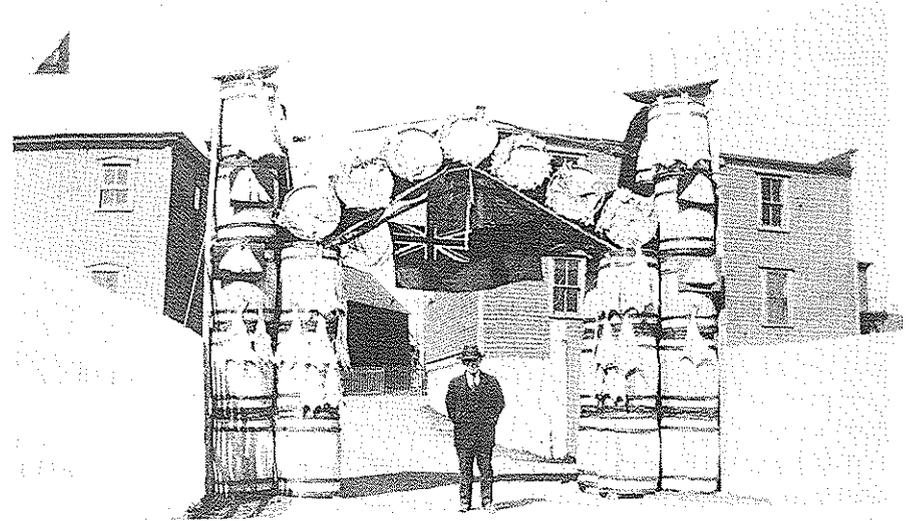


Plate 2. A Grand Bank, Newfoundland schooner fishery merchant stands beneath ceremonial archway of barrels and saltfish, topped with model schooners - key symbols of his trade. The archway probably honours a visit from Newfoundland's Governor General, circa 1920 (Source: Nellie Green).

trade with, and a staff processing and shipping operations. Some merchants became partners, and marriage among and between their offspring and with successful fishing and shipping masters grew. A small merchant, parvenu-aristocratic class, distinctive in political and economic power, separate social place, and lifestyle, emerged in and among the banking centers.

Unlike practices reported for schooner firms in the same period at such Nova Scotian ports as Lunenburg, where shares in bankers were sold and held locally, ordinary fishermen in the Newfoundland ports appear to have had little opportunity to participate in schooner ownership. It seems that only fishing masters might do so. Even this may have been rare, and usually in a minority role. What prevented ordinary dory fishermen from owning shares in schooners? This exclusion probably resulted from a combination of factors. It was difficult to accumulate the necessary capital, merchants-owners may have resisted such ownership participation as inappropriate class conduct, and both merchants and skippers might have found it complicated their exercise of authority.

The Fishermen

Labour for both large and small dory schooner activities came from small, especially south coast settlements. Some men moved back and forth between employment on the two types of schooners, pursuing their individual career strate-



Plate 3. Newfoundland and Nova Scotian schooners in port for bait, laying at anchor, and drying their sails, at Burin, Newfoundland, circa 1929 (Source: Wayne Hollett collection).

gies. Many joined large fishing schooners that arrived each spring from Nova Scotian and American ports, in search of frozen herring bait. Other men from these same outports chose never to go to the banks.

Vessel owners preferred to recruit skippers who came "up the ladder," from the ranks of experienced banks dory fishermen. Steps in the progression were from dory fisherman or dory 'mate,' to dory 'skipper,' mate or first hand, to fishing captain. Many banks fishermen also gained experience on Newfoundland's trading vessels, i.e., those involved in coastal and foreign-going transport. Some went 'freighting' during the winter period between fishing voyages. A captain whose career was primarily in 'traders' was sometimes recruited to command a banks schooner. But such assignments were usually temporary, for want of an experienced reliable banks fishermen alternative.

The 'Voyage'

Men joined their schooners each spring. The first 'trip' in their fishing calendar, or 'voyage,' usually began around April 1st. The voyage involved spring, summer, and fall bait phases or trips built, respectively, around herring, caplin, and squid. The last ended by mid-October, but there was often opportunity for winter fishing on banks off Newfoundland's southwest coast until Christmas.

During the voyage the bankers made harbour frequently to discharge their catch, and for bait, gear, provisions, repairs, and to discharge and replace sick or injured men. Bankers ranged widely: from the banks off the southwest coast in winter and spring, the Grand Banks in summer, and, commonly, to the Labrador Coast in late summer and fall.

The Financial Incentives to Fish

The financial structure of this fishery changed little from at least 1900 to its conclusion in the early 1950's. The vessel owner received the market value for the processed catch after any brokerage fees. The cost of bait, ice, and perhaps other minor expenses were subtracted from this gross figure. From his 50 per cent of the balance, he covered all basic expenses (e.g., vessel-, fishing-, and sailing- or running-gear, provisions, insurance, cost of processing fish ashore, and shipping), and the following guarantees:

The skipper was entitled to receive five per cent of gross landed value. This percentage varied in practice; a "really good" skipper might get somewhat more, others less. The mate (who fished from a dory with another hand when the schooner was on station) received \$50 for the voyage, and the engineer, if any, from \$.50 to \$2.00/day, depending upon vessel size. \$1.00/day was average. A cook was usually guaranteed \$1.00/day or \$30 per month. That would be his minimum guarantee when fishing on shares; he would receive the equivalent of a share. A 'kedgie' or deckhand and cook's helper probably received a monthly guarantee, earnings from value of minor products (e.g., salted cod tongues) salvaged while processing fish on deck, and from fish caught from the schooner or while in dory when replacing a regular dory hand.

In addition, lay arrangements entitled each dory fisherman – including the mate and engineer – to a portion of the 50 per cent 'crew share' as determined by the merchant. But individual dory crews received substantially different earnings under the 'count' and average share schemes (described below), which were used in this fishery at different times. Moreover, in the case of the count system, the captain and, perhaps, the cook were excluded from receiving a share. It seems that their earnings were primarily based upon their percentage and daily guarantees, respectively.

Under the *count*, each fish taken from each dory was literally counted and recorded by the skipper, cook, kedgie, or mate to the credit of its dory crew.² The tally record was kept in a prominent location at all times so that dory crews were aware of each other's catch progress. Some men kept their own tally for comparison with the skipper's count. The captain delivered his tally to the company office upon arrival in their home port. Captain Arch Thornhill (b. 1901, d. 1976), a Fortune Bay banker who sailed from 1918 to 1948, describes the final steps:

When the fish is discharged, washed, dried, and weighed, the count of fish would be made up per quintal (112 lbs.). When this was done you know how much one fish or one thousand would be worth, depending on the price paid (per quintal). For example, if a dory had a count of 5,000 fish when the trip was finished, and it fetched \$20/1,000, each man for that dory would share one hundred dollars for this trip (i.e., each would receive \$50).

The *average* share arrangement gave *all* crew members, whether in dory or not, an equal share of the 50 per cent landed value. The same share system concept

remains in use today in deep sea trawler fishing in many parts of the North Atlantic, although overall owner/crew proportions and designated guarantees vary.

It seems that both major schemes, and the minimal earning guarantees mentioned above, were at times used on the same voyages. The logic underlying their use and, in some fishermen's recollections, eventual abandonment of the count in favor of the average system (see Andersen 1980), will be briefly clarified later in this paper.

Accounts were usually 'settled up' before Christmas in a private meeting between each individual fisherman and the merchant. Charges to the man's account, as for supplies advanced to his family during the voyage, extra costs he incurred during the voyage (e.g., for boots and clothing), and winter supplies obtained upon leaving for home, were usually deducted from his voyage earnings. But Newfoundland vessel owners typically settled up with their men without providing detailed accounts. As Captain Thornhill recalled,

... when you finished in the fall you never got a detailed statement about how much fish you had, or how much your bait and food bills came to, or anything like that. All you could get down when you settled was your own account (Andersen n.d.:230).

Men sometimes ended the voyage with little more than the merchant's promise to 'carry' them through the winter and following year in return for their commitment to sail on one of the firm's schooners the following spring. There was often little cash exchanged until the 1940's. It is remembered as a time of credit bondage and fisherman exploitation by merchants.

From the time before you start fishing, you'd have to start charging things. Everything, from a needle to an anchor, would be charged to your account. And the price would be higher than if you paid cash. There'd be two or three cents added even to the price of a pound of rolled oats, if you didn't have the cash to pay for it. And the higher the item's cost, the more was charged on *charge* prices! It was clear roguery!

Space Use Customs on The Bank

Skippers

Skippers sought to locate their schooners at fishing "berths." Likewise, they assigned their dories to berths or fishing spaces. In Newfoundland parlance, a berth is "a particular station on fishing grounds, . . . assigned by custom or lot to a vessel, boat, crew or family . . ." (Story, Kirwin, and Widdowson 1982:40).

Berths at the Inshore Interface

Fishing berths, operations and relations discussed in this paper are those out on the banks, away from the important interface between banks and inshore fishermen. This interface is a volatile frontier and theatre where fishermen with vastly different technologies, scale, social relationships, and operational codes

struggle for resources and community destinies. The character of this contention as seen from inshore during the 1930's is suggested by Junek (1937:25):

The sea is really communal. Cod-fishing is carried out independently by each family unit; but each family's success in fishing depends to a considerable extent upon the indirect cooperation it receives from other similarly integrated units. For example, one man may point out to his neighbors the better fishing locations; he may protect fishing gear other than his own, or refrain from disturbing the cod or salmon traps of others. *All work harmoniously together in not permitting Newfoundland fishing schooners - the crews of which are considered foreigners or outsiders - to enter their fishing domain, except when the winds are unfriendly and the trespassers cannot with safety stay outside of the harbour. Even then the schooner is only permitted to cast anchor; all rival fishing must be done away from the immediate territory in spite of dirty wheater* [my emphasis].

Junek speaks of inshore fishing communities at and near Blanc Sablon on the lower North Shore of the Gulf of St. Lawrence, near the Straits of Belle Isle. He may romanticize the harmony of the small community here (cf. Butler 1983:1819), but he captures the quality of the tension between the banks and inshore sectors met around the Newfoundland coast and on the Labrador. A similar, more serious tension exists between inshore and offshore fishing interests in the context of competing present technologies. This topic merits discussion elsewhere. I confine the following discussion to practices around berths on the banks proper.

Berths on the Banks

Once in place, skippers employed one of two approaches on the ground; they either fished *at anchor* or *under sail*. The first involved deploying the schooner's dories about the anchored schooner or "mothership." Individual dory 'skippers' usually drew for their respective berths or compass positions.

We'd make up so many compass courses, so many points apart, depending upon how many dories we have. Then each dory skipper would draw a ticket with a course on it from a sou'wester. And then you'd go on your course, north, northeast, south, and so on, around the vessel. You'd moor the gear with anchors, take bait and go out and underrun it; when you hauled towards the schooner, you'd pass your gear over the dory and it would be out fishing while you were aboard. Sometimes we would fish seven or eight days like that in one place - if you were lucky and struck the fish.

Fishing under sail involved deploying the dories at suitable intervals or berths from the side of the vessel while it was in motion. The dories might be towed for a time until the skipper signaled their release, or simply released when first set over the side. The latter practice was referred to as the 'flying set'. Newfoundland banks fishermen remember it as both risky and exhilarating. It was used because conditions of strong tide and ground made it necessary, and as a quick way to establish the value and character of a fishing location. Charlie Hendrick,

born in 1887, spent 15 years on the banks aboard Newfoundland and American fishing schooners. Interviewed by Kent Martin in 1972, he recalled:

Sometimes we'd make a 'flying set.' That's where you only set a tub or two of gear (from each dory) and you only let it soak a short time. That way you could see what was there and whether it was worth the trouble to set all the trawl. Some places, you know, is spotty. The Gully was bad for that; lot of hit or miss.

Once the dories were set off at their respective berths, the schooner jogged about long enough for each dory crew to set its gear, then proceeded along the same line from its starting point to retrieve each crew. A skipper's explanation follows.

We dropped our ten dories with their gear so far apart (30 to 40 meters) from the side of the vessel. Every dory set down the one course, the skipper told them to sail before they left. Say, 'Set southwest, now, today, boys. Everybody set southwest.' You would tow them along in this direction, each dory would go down, and they'd drop their buoy overboard and tow out their buoy lines. When you got a little distance from one dory, you'd drop the next one and go on until all your dories were out. And when the last dory was dropped, you would sail down the length, the reach of that gear, to pick them up again.

After setting their gear, I'd pick up the first dory I dropped, and go back until I had picked them all up, in rotation, as I dropped them. I'd sail back on the weather edge, and by then the men would be finished with their dinner and you'd drop your dories again. Then they'd haul their gear in the same direction that they set it. That's fishing under sail. (...) When they had their gear set out, I took them aboard the vessel again, and they had their dinner while I beat up on the windward ends. By the time I got up there, they had finished dinner, and I dropped my dories again and they went on to take in their gear (Andersen n.d.:193-94).

Skipper Information Management

Information is only fragmentary and suggestive about how skippers managed their use of space from one fishing ground to another, day to day. The information is in journalistic, and anecdotal-oral history form.

When I first examined this topic (Andersen and Stiles, 1973; and Andersen 1979), I noted the schooner skipper territorial management practices sketched by Rudyard Kipling in *Captains courageous*. Published in 1896, it is based upon his knowledge of schooner operations conducted from Gloucester, Massachusetts, during the 1890's. Granting journalistic license and the possibility that Kipling's portrayal of Gloucester fishing is largely anecdotal in origin, rather than grounded upon his observations on the fishing grounds, his description rings with truth. My oral-historical research with retired Newfoundland and Nova Scotian banks fishermen indicates as much. American, Canadian, and Newfoundland fishing schooner operations were very similar.

New England fishing crews were typically a mix of Americans, eastern Canadians, and Newfoundlanders. American, Canadian, and Newfoundland schooners often baited up at the same ports, fished the same grounds at the same time, and shared similar catching technologies or gear. They used *handlines* from

dories, as in Kipling's description of Gloucester fishing, and the *bultow* or *long trawl*, the primary gear used in late nineteenth and twentieth century Newfoundland banks fishing I discuss elsewhere (1980). And they employed similar reward or lay arrangements.

Their skippers pursued the largest codfish. They brought premium prices. Bait and fishing time were scarce values. Skippers sought to catch as much as possible in the shortest time until bait and salt were exhausted. They sought their quarry in optimal density locations. These varied continuously. Skippers were nothing less than hunters; they shifted their vessels from ground to ground, endlessly dispersing and concentrating.

Preoccupied with location and catching, skippers carefully managed environmental-ecological knowledge and the spacing of their extractive units. Individual skippers varied in their knowledge, as they did in talent for handling men. Kipling tells us that there were those with the reputation of a "master artist who knew the Banks blindfold [sic]" and could always find fish, and others who "scrowged upon" them (Kipling 1961 [1896]:39-40, 45, 71, 80).

Most Newfoundland banks skippers were nearly or totally illiterate by informant accounts. Their success hinged greatly upon extensive experience, keen observation and memory. Regularly kept logs were rare, and much of what a master knew he had to 'find out for himself.' Reason suggests that skippers managed their hard acquired skill and information as scarce values.

Skipper knowledge, like a complex capital asset, was subject to continuous investment, testing, and building. In the company of other skippers and fishermen each eagerly sought its expansion and improvement. For example, they took special care in mastery and exchange of essential coastal navigational lore, as in recitation of old mnemonic navigational song rhymes. An example used when sailing along the Labrador coast follows.

When Joe Bett's P'int you is abreast,
Dane's Rock bears due West.
West - nor'west you must steer,
'Til Brimstone Head do appear.

The tickle's narrow, not very wide;
The deepest water's on the starboard side.
When in the harbour you is shot,
Four fathoms you has got" (Duncan 1905:32-33).³

But they were also highly "individualistic" and secretive about handling much other knowledge. For example, by some accounts, charts aboard the schooner were the master's exclusive property. He might bring them out only rarely, as when instructing his mate, then return them to safety in his cabin. The specific chart location of a fishing position was often unknown to all but the master and mate. Further, most dorymen were reported unable to read the sea chart, although they were able to employ the compass in limited navigation. Many lacked even that skill.

The structure of responsibility and authority tended to exclude free, informative dialogue between the skipper and his men. A skipper was expected to tell his men what he wanted them to know and do. The crew hesitated to ask him to fill in the gaps with specifics believed sensitive, his business, not theirs.

In course skippers developed space-information management techniques to capture first right and/or the most advantageous position for use of desired locations, and left others "to bait big an' catch small." In Kipling's words:

Naturally, a man of Disko's reputation was closely watched – 'scrowged upon' . . . by his neighbors, but he had a very pretty knack of giving them the slip through the curdling, glidy fogbanks" (1961:80).

But Disko, a journalist's archetype skipper, contended with problems faced by *all* schooner skippers. Fish concentrations, and operating conditions – including competition – were always changing. All masters shared uncertainties and the conflicting pressures they inspired. All sought to maintain or build good crews. They did so by bringing them to productive locations, by applying their catching capacity effectively, by holding a productive location as exclusively as the open sea and custom allowed, and by keeping both vessel and men as safe as operating demands required and conditions permitted.

My primary informant, Captain Arch Thornhill, a man with more than 40 years experience fishing the banks, recalled two cases of skipper action relevant here. Both involve the conduct of two other skippers. One, Morgan (or Mawg') Mathews, was a reputed 'highliner' or top skipper among Newfoundland fishing masters. The second captain remained unnamed in each case because the events described reflected unfavorably upon his reputation. The first case strikes me as anecdotal, based upon a story Captain Thornhill heard. But he was clearly present during the events described in the second case. These cases, and the two that follow, are taken from Captain Thornhill's biography, a document being prepared for publication (Andersen, n.d.).

Case 1: Once skipper Mawg' Mathews was fishing at anchor on the Grand Banks. It was toward the end of the caplin trip, about when the squid struck the Grand Banks, and the whole crew would jig their own bait. Fresh squid would get two or three times as much fish as the last of your iced caplin. Mawg' was getting a lot of fish on his last caplin when this other schooner came along to speak to him. When he saw it coming, he placed some men on the stern quarter and had them pretend to work their squid jiggers, to make the other skipper believe he was getting squid. But there wasn't a squid in the water, and I don't think they came in at all that year.

Mawg' told him there was a lot of fish there, but he didn't say he was getting it with caplin. So this fellow anchored a berth away from him and put his crew to work with their jiggers too. And he never set his gear that day with the caplin he had, because he thought the fish weren't taking it. By dark, he had no squid and hadn't set his gear either. And there was Mawg', catching away with caplin.

I'm not an angel, but my conscience wouldn't let me do that. You didn't *have* to do things like that to make a living."

Case 2: Another time when I was in the dory with a skipper I won't name, we were fishing about 120 miles off on the banks on a small patch of shoal ground called the 'Hump.' There was always a lot of fish there. It was Sunday night and we'd already taken about 200 quintals while anchored there on Saturday. But another Grand Bank schooner was anchored nearby and our skipper thought it was taking more fish. He called us out to bait up that Sunday night, and first had us heave up the anchor, to jog around this other schooner until daylight, so he'd drop us off in just the right spot while the other men would still be heaving up theirs. We'd head them off and be on that spot of fishing ground. Normally, you'd bait up, wait for light, and then heave up to change your position.

But the other skipper (Mawg' Mathews again) was too smart for him. He saw us jogging around, dodging back and forth, baiting up our gear at the same time so we'd be ready to set our gear before his. At daylight he was still there, anchored, we thought. But this man was cute enough that he told his men to heave the anchor just so many fathoms from the bottom. So she was drifting off while we were joggin' around her.

At daylight, we clapped our eleven dories out and set our gear. Then our skipper asked, 'How come he be so far away from us as this, now?' We didn't bother to sound before. And when we went out and took in our gear, there wasn't a cod fish on it. Just some black dogfish and other, old, queer fish.

Meanwhile, the other skipper anchored up there, fished, and had the biggest kind of day. I don't think our skipper ever forgot that, ever forgave him for that. Because it made him a laughing stock. It was a mean thing to do. I couldn't do it, and I know many other men wouldn't either. There was no reason for us to heave up that night after we had taken the bait off our gear. But our skipper said we'd be there to set our gear first, just in the right place, when the other skipper was only heaving up his.

In these anecdotes, Skipper Mawg' is a Newfoundland Disco. But Disco is every fishing master. Fish catch was always uncertain, performance always competitive. No skipper, acting alone, could be certain of success. The risks all constantly shared dictated the customary expectation that every fisherman might at times be aided by others. Skippers relied upon each other for direct and indirect information on fish location and appropriate technique and action, from ground to ground, day to day.

Dory Berths and Disrespect

What did Kipling say about how individual dory fishermen respected fishing berth customs? He described an estimated thousand fishermen in dories and schooners gathered one mile off the Virgin Rocks or Eastern Shoals. Dense shoals of cod were visible in the shallow water,

. . . swimming slowly in droves, biting steadily as they swam. Bank law strictly forbids more than one hook on one line when the dories are on the Virgin or the Eastern Shoals, but so closely lay the boats that even single hooks snarled (1961 [1896]:103).

A man caught doing so might be struck with an oar, knocked over the gunwale into the sea, to become the butt of amusement in slack times.

In the Newfoundland banks schooner fishery, my primary informant, Cap-

tain Arch Thornhill, recalled two occasions from his time aboard unpowered schooners. The first, *Case 3*, concerns two 'stunts' when winter fishing on the count system in 1924 off Rose Blanche, on Newfoundland's southwest coast, when he and a cousin were dorymates. The second, *Case 4*, describes events in the early 1940s, when fishing under the average share system off the Labrador coast in the late summer and early fall months.

Case 3. We had some of the best fishermen onboard, but we had made up our mind to try and keep up with them. To be highliners you had to work and use all kinds of stunts. If the captain gave orders to use 40 lines of gear, and I'm smart enough to get up to the cabin in the morning and can be finished baiting my gear half an hour ahead of the rest, I'm going to put on two or three extra lines. But no one, especially the skipper, is supposed to know that.

When our vessel is anchored and the gear left out overnight, and we're underrunning it, if I'm on watch at night, I'd sneak down in the cabin and get a couple of extra lines of gear. You'd haul open your dory and roll the lines up in it. Then, when you go out, you put up your sail to sail down, and while the dory skipper is steering along, his dorymate is baiting up the extra lines. You'd put them on the outside end of your gear and catch more than double what you'd get near the schooner. I've seen a fish on every hook on the outside end! But if you put on extra lines and were behind coming back aboard, or behind baiting up your gear, you're not able to handle your gear. If you can use it and be on time with the rest of them, it doesn't matter to anyone.

I remember another stunt my cousin, Frank, and I used . . . , and a good many other *good* fishermen used too. One day we were fishing out on Mizzen Bank and caught 800 fish for our dory. Five or six of the other dories had scattered fish on only half of their gear, while the other half of it went out over the shelf into deep water and caught only black dogfish. That evening, when all the dories were onboard, the skipper hove up and anchored again on the outside edge of where Frank and I were that day. Now, when you weigh anchor, even if it only comes off the bottom, you have to draw new courses for your dories and can't go on the course you had just before. We drew a course further up and knew that some dories will still go into deep water, but we didn't say anything to anyone.

If we went in the direction of our new course, we also knew we'd get no more than half of what we had yesterday while the dories fishing on our old course would come in with 800 or 1000 fish. When we got in our dories again, everyone else went on their courses. We gave them a chance to get a bit ahead of us and then moved in between two dories, going right back on our old course. The skipper could see us, because there was no fog. And when Frank and I came aboard, he said, 'Arch and Frank, what did you fellows do today? Your course was up there, wasn't it?' 'Oh, yes, sir.' 'Well, why didn't you go up on your course? You was down there between two dories, takin' up more space. You fellows had no business to do that!'

The other men, when they came onboard, were wild about it too, especially the two dories we sat between. We were taking a lot of fish they were going to get. 'Well, sir,' we said, 'perhaps you'll see this evening, when we get our gear in, that there is nothing to get mad about.'

After we had our snack, we took in our gear and brought aboard exactly the same amount of fish we had the day before. Sixteen hundred fish for two days! And, work! You had to work, by God. If you didn't work, you wouldn't get any fish. That's all. The other fellows got fish, but we happened to have the most. Six or seven dories had 780-790, but we had 800 and were top dory. About half the dories had a good day's work for the vessel. But that's

it, countin' fish. There were some dories that had less than 200 fish that day. When we came aboard that night, they had to do the same work, putting down all the fish, and that's how it went on.

Case 4. Most schooners fished on a big patch of ground down there called the Round Hill (island), about three or four miles off Salmon Bite, where we harbored. It has about 10 or 12 miles of ground, and was better than any other place off the Labrador for fish in the fall. The *Florence* was almost the only dummy (unpowered) schooner around then. The vessels with power could steam in and harbor in Salmon Bite, while we were always the last schooner to come in. I couldn't hang on in the harbor the way they did or they'd head me off and have all the good ground, so we anchored outside, and left again at about twelve o'clock at night to have our gear out on the good grounds before they did.

But this one fellow (a much reputed top fishing skipper in another schooner owned by the same firm), his crew cut us up bit by bit, morning after morning, day after day. And we had to get out of it and get new lines from someone else. And that was only us. This went on for a long time. With a small patch of ground and a lot of schooners, whoever got their dories there first, they'd get their gear all cut, cut, as the others went along. They've been down there and wiped one another out. You would try to be the first to get there, otherwise, cut and get the gear and fish. It was a hard racket. But we weren't counting fish then.

There was plenty of cutting lines from one schooner to another. Not so much on the Western Shore, where you fish in about 100 fathoms, but a lot on the Labrador where you have shallow water, from seven to ten fathoms.

And sometimes it was your own fault. You would set your gear a little too close to another schooner. Perhaps you knew the other fellow was trying to hit it big where he took a lot of fish the day before, and you squeezed up as close to him as possible, then two or three of your dories got tangled up with some of his. If you weren't there first, someone would cut you up, because you had no business going there.

But was anyone culpable for this destructive action? The skipper or his dory fishermen, or both?

Discussion

Contradictions and Fisherman Initiative

Wherever fishermen compete for fish we may expect to find them using information management. Practices used by Newfoundland banks fishing captains had their parallel among east coast Newfoundland 'floater' schooner fishermen who fished the Labrador coast each summer, with cod traps and handlines. Finding a good fishing berth at the start of each season was a key concern. Being first to exploit the location was an advantage to protect. One observer (Cabot 1920:42-43), recalling a run he made with a Twillingate captain along the Labrador coast from Hopedale to Davis Inlet in 1907, wrote of the floater's captain:

He was watching everywhere for fish. Here and there along the islands or in far bays were lying other schooners. Off he would go in the rising breeze, for a speck of a hull or a masthead

showing over some low island, down overboard into the boat towing behind, and away for a talk and a visit. His purpose was to find out that the other skipper was getting fish, if he was; the latter's, as a rule, to conceal the fact if he could. No crew on fish wants neighbors. Boats coming in from traps were scanned, boats jiggling vainly to find a "sign" of fish were noted. Nothing escaped observation.

A boat lying low down with fish would be a certain find. But it was early in the season, fish were scarce, and all the schooners floated high. (...) 'What's the use of talking with other skippers?' I asked, 'They won't tell you the truth.' 'I can tell pretty well by the way they talk,' he answered. Almost always, I think, he could tell; there were a good many indications to go by.

The cases cited above from Newfoundland banks schooner fishing illustrate common fisherman knowledge about actual practices. Such anecdotes stand as models for and interpretations of custom and action. They inform us that skippers sometimes purposefully sought to prevent encroachment upon "their" fishing space and at other times to arrogate another vessel's space to themselves by information management and other tactics, even aggressive intrusion. But fog, sea conditions, and the nature of a specific ground often enabled encroachment, even invasion and seizure, without clear evidence of manifest destructive intent.

Skippers felt compelled to act competitively to protect themselves, their commands, and their crew's livelihoods. Each schooner crew was a corporate entity despite its membership in a fleet of company schooners. In *Case 1* a skipper enlists his crew in action designed to mask their success and actual fishing at a productive berth to which they had first claim. The newcomer follows the false lead and lands no fish that day. The captain narrating the incident holds that he couldn't do what the first skipper did because one "didn't *have* to do things like that to make a living."

In *Case 2* the skipper, misled, is made a "laughing stock," a "mean thing" to do that the narrator and many others supposedly wouldn't do. Actions that were obviously intended to harm another crew's living and/or their captain's reputation are claimed undesirable from this standpoint. A captain's reputation was important to his ability to recruit able men. Whether or not morally justified, such actions might endanger future helpful reciprocities, e.g., information exchange, between captains.

These cases indicate that information management practices among schooner skippers were as much custom as were first use rights. But the anecdotes also tell us that deception, harmful skipper action, is "mean," undesirable, and unnecessary "to make a living."

Just as each schooner was a separate corporate unit whose landings alone determined its crew's earnings, whether fishing on the average share or the count, each dory crew stood more or less alone in respect to its reputational and income rewards. Thus dory fishermen had reason to ignore their skipper's orders and were sometimes 'smart enough' to crowd or intrude upon the space assigned other dory crews. In doing so they emulated their eager captain's own behavior. Sometimes their action resulted in destruction of each other's gear, but this was not always intentional.

Case 3 describes 'stunts' used by two dory fishermen who strive to be high-liners among their crew. They secretly exceed their skipper's orders when they add several extra lines to the outside end of their gear. They disregard the outcome of the customary draw for new course positions required when their schooner shifted its anchorage, and returned to their previous course. (The draw was probably integral to fishing under the count, as it distributed positional and fishing opportunities equitably.) Their skipper saw them squeeze into the space between the other dories, which angered their crews. The transgressors believed the fishing circumstances justified their action, and it seems their catch proved the point to the captain's satisfaction. This case reminds us that violation of the space use custom should be practical and opportunistic. It should mean no certain harm to other men in the same crew.

A skipper would tolerate his dory crew's occasional transgressions of space use rules and his orders if that led to profitable landings. Such occasional infractions are consistent with every captain's desire to have eager, resourceful and enterprising hands for his crew. At the least, rigid obedience to orders risked lost fish production. Likewise, a smart skipper knew when to be flexible. And, once again, there was the lesson of his own competitive practices in relation to other schooners. They contradicted rigid conformity to custom and command.

But there was risk in permitting such transgressions, perhaps especially berth abuses among his own crew, particularly when fishing on the count. The count placed high priority on fairness in all work and deployment orders, so every dory crew had a fair chance to succeed and disruptive crew jealousies were avoided. Suspicion of preferment had a fertile ground in the kin and/or community relationships found on most vessels; a captain and his dorymen were often kin and friends. They often had to return to the same small community at year's end. Arbitrary skipper action was likely to have been somewhat restrained by this network of personal relationships.

When fishing under the count at times the preoccupation with fairness in all decisions made it difficult for captains to make best use of fishing and task division opportunities. Where a simple redeployment of dories might improve the overall catch of all of his dories, under the count he was often compelled to haul anchor, move the vessel, draw for new berths, and only then redeploy them. When fishing and processing tasks might have been divided among the crew to everyone's advantage, all fishing hands had to either fish or process at the same time. In consequence, fish that might have been caught were not, and fish processing was delayed and fish deteriorated. Diminished fish quality risked lost earnings.

Captain Jim Harris (b. 1894), speaking of schooner fishing around 1917, observed:

There wasn't a happy man aboard when you're fishing 'highlow' (on the count). Because you always thought the skipper was doing someone a favour. Now, you tow your dories out in a string, and the dory on the slab set - the first and the last ones to drop off, had the open ocean (on one side). But the other ten dories on the 'fence' would be surrounded,

wouldn't get so much fish. So you always thought the skipper was doing this man a favour for giving 'em the most slab sets.

Under the count crew relations were often highly competitive, tense, bitter, uncooperative, and conflict-ridden. Arguments over count accuracy and suspicion of skipper preferment were common.

Dorymen, for their part, concentrated upon maximizing their catch *numbers*; fish of size, quality, and value suffered, or so it seems. The following quote captures the opposition of interests between captain and dory fishermen when fishing under the count. It is from Waterfield Green, a retired dory fisherman from Grand Banks, on the South Coast. He recalled an occasion in 1934, when winter fishing in the first week of the herring baiting:

Twas a bad day. But, fishing count, you get it how you can. We took all the big ones, and hooked them on our gear for the next day, and took all the small ones in dory, for to get the one haul, and could 'a been the high dory. (When they came alongside their schooner,) the skipper said, 'You got the small ones today.' And I said, 'Yes. There's two reasons for that. You're goin' to take the small fish, 'cause that's what countin' dooz. And you're gonna take the small ones so you wouldn't have your dory so much loaded so you could pull alright to the bitter end.' And we got aboard.

This maximizing also drove fishermen to, by their reckoning, often fatal risk-taking, e.g., by staying out too long against bad weather indications and overloading their dories to make up for bad catch days. Waterfield Green, speaking of the same occasion in 1934, continued:

Skipper always gave us to understand, when it gets too bad, come on board. And, fishin' count, it drives you to stay out when you wouldn't. So, the skipper, he fired away the board and said, 'B'ys, there's no more fishin' count. I'll be expecting every one to come aboard when the other fellow goes.' We got the best kind of a summer out of that. Things were scarce those years. I came home that year, and had \$82. That was *thousands* for the winter!

Beyond these problems, vast differences in dory crew earnings unfairly and enduringly stigmatized *good* men at the end of a voyage when they were ranked "low dory" despite equivalent work and risk-taking. Individual work reputations were affected.

Case 4 recounts fishing in shallow water on the Labrador, where "there were plenty of cutting lines from one schooner to another." This was because one schooner tried to squeeze up as close as possible to the other's position when the latter seemed a more productive one. The anecdote tells us that cutting lines was unjustified, "if you weren't there first...because you had no business there." Here violation of first claim justifies destructive action, but, as indicated earlier, first rights were not always clear.

Whether or not a fisherman knew who had first claim to a location, when gear became entangled its destruction was often a practical necessity. There was no time to consult higher authority. Besides, berth assignments were a captain's

responsibility. The dory fisherman held rights to the berth by his captain's command. Anyway, it took precious time to disentangle a gear snarl met while retrieving gear and catch. Time constrained dory fishermen in respect to sudden weather changes, returning to one's vessel when expected, and producing fish necessary to earnings and reputation. Moreover, the other gear's ownership was often uncertain. It might be from one's own or another vessel. It might be lost and long forgotten. Its buoys might indicate ownership, but seeking them out, if still attached, meant to haul away from and neglect one's own gear and catch.

'Dory Gone Astray': Incentive, Risk, and Death

When you left the vessel to haul the gear, one third of the dories went to leeward the length of all the gear – sometimes two miles, but at least a mile and a half. There is thick fog on the Grand Banks ninety per cent of the time, plenty of wind and a big sea running, and all you had to run for was a small buoy on the end of the gear with a little marker called a 'black ball'. Lives depended on that; if you missed that little ball, there was only one thing to do: row back to the vessel. And many lives have been lost. Some men have been astray for days and have rowed 100 or even 200 miles before reaching land. Many lives have also been lost by overloading the dories, especially when counting fish (Andersen n.d.:72-73).

A thorough history of banks fishing in the Northwest Atlantic would acknowledge that during the schooner and dory fishing era countless dories and crews went astray, and an unknown number of them were never seen again. Why? Our literature offers no systematic record or interpretation of such strays. I recently attempted to construct one from microfilm archival records of U.S. Consular Dispatches from St. John's during the period 1834 to 1912 (Andersen 1986).

My search found 57 cases of men (many native Newfoundlanders) who strayed from their American schooner motherships somewhere on the Grand Banks in the period from September 1873 to June 1902. Forty-four or about 77 per cent of these strays occurred in dense fog and/or storm conditions. One man may have deserted. The rest were unexplained. Forty-seven or 82 per cent of the strays occurred from June through August, 92 per cent from June through September. One case was reported for February; it is a classic illustration of the extreme hardships dory fishermen faced, especially in winter on the Western Banks off southwest Newfoundland, and was the basis for a moving story about Gloucester dory fishermen (Connolly 1930:130-49). Beyond mention of fog and weather conditions, no other causal factors are suggested in these reports.

I have suggested that the design of economic incentives involved in this fishery played a special part in these misfortunes in Newfoundland banks fishing. In particular, the count incentive system drove men to take heavy risks with their lives, as in overloading their dories. The count was intended to drive men to work hard. It was perhaps most often used by skippers when they were unfamiliar with the men recruited. This may have been the case especially during the war years (1914-1918, and perhaps 1939-1945), when, according to the late Captain Jim Harris,

... good crews were hard to find because so many had joined the army or navy to fight in Europe. Since skippers did not know the men they were shipping, they reverted back to the *count*. If... the man was lazy and not a hard worker, the only wages he affected were his own and his dory mate's.

Skippers, how many we will not know, who commanded men under the count knew its dangers. The late Captain George Follett, one of Newfoundland's great banks skippers, held, "The count was a killer." And, as suggested earlier, the count system, if held to for an entire voyage, could leave some men with no earnings at all at its conclusion, while others went home with plenty. Yet all had shared the same burden of risk and work.

By contrast, the share or average share system, whether used for all or part of a voyage, spread uncertainty evenly over the entire crew. No dory crew need feel compelled to take greater risks than their comrades despite their dory's run of poor fishing days. This arrangement also enabled the master to deploy and redeploy his catching capacity as he saw fit, to maximize situational fishing opportunities, without having to shift anchorage each time to maintain equity among his men. In the bargain crew tensions were reduced and cooperation encouraged. This is not to say that the share arrangement pleased all hands. Indeed, some felt it meant having to carry lazy and ineffectual fishermen on the backs of good men. As my primary informant recalled fishing in the 1920's:

In a crew of 11 dories and 25 men, you get some peculiar characteristics. Some are very energetic, another dependent on the other and inclined to be sick on a bad (weather) day. So, fishing count, you *had* to get your livelihood. I'd never let myself down small. I'd sooner go out and drown than I'd give in. Afraid at times, but I only knewed that my ownself.

Logic suggests that the count increased pressure on dory fishermen to take chances with their lives, and that it must have made them more willing to try stunts that transgressed customary understandings about the use of fishing berths on the grounds. This view is consistent with how Newfoundland's surviving banks dory fishermen viewed their history. How they remembered it would seem our best authority in the absence of other historical evidence.

But I can point to no specific occasion when the count and it alone shaped fateful risk-taking and loss of life in the fishery discussed. Early in their lives boys and young men internalized the value of pursuing a reputation for eagerness and resourcefulness as big fish-killers. It was always involved, whether fishing under either the count or share systems. And overwhelming bad weather, boating skill-, navigational-, and gear-accidents add further uncertainties to any single cause argument.

What became of the count labour incentive system in Newfoundland's fishery? The memories of old fishermen give different views. Depending upon port and who one asks, the count "ended" or was summarily - even dramatically - abandoned, and gave way to the average share system as early as 1917. Or it ended in 1934, when earning conditions were at their worst and crewing vessels at all was difficult. Or it continued in use until the late 1940's, when the introduc-

tion of groundfish technology removed the possibility and need to measure individual men by the fish they landed. There is some truth to all of these views.

The count was one of two basic incentive schemes that skippers applied to mobilize their men's labour effort. I believe that skippers applied or removed them as circumstances required. When their performance or commitment to effort was uncertain or unsatisfactory, skippers applied the count. A wise crew soon saw the wisdom of "pulling together" under the average share.

We may be sure that there was a running dialogue among the crew, every day they fished, about their catch, individual dory crew performance, earnings, and work conditions. And their skipper closely watched them, urged them on, and sought to stifle their grumblings by suggesting the best way for all hands to work. For many fishing masters, that meant working hard, together, and on shares.

Notes

1. I am grateful to the Co-Editors of MAST, Rob van Ginkel and Jorada Verrips, and Robert Paine and Robert M. Lewis, at the Memorial University of Newfoundland, for their critical remarks on an earlier version of this manuscript. Marilyn Furlong and Annette Carter typed the various versions of the present manuscript. My thanks to both of them.

2. Rewarding fishermen on an individual production basis is an old and widespread practice in the fisheries of many nations. For example, Innis (1954:328) writes that in the New England mackerel line fishery of the 1830's, "The skipper and other officers usually took one fish in every sixty-four, and credited every man with his individual part of the catch."

3. The rhyme given here may be a fragment of the "Wadham's Song," a coasting song possibly written in 1756. According to an anonymous source, its author was Erasmus Wadham, an English Royal Navy officer. Wadham's composition may have been approved by the Admiralty Court in London, and used by pilots as a coasting guide. It seems the song has many versions.

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Job Satisfaction and the Culture of Fishing

A Comparison of Six New Jersey Fisheries

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ABSTRACT New Jersey's marine fisheries exhibit unusual diversity within a small geographical area - contrasting in terms of prey species, gear size and type, trip duration, seasonality, regulatory policies, and income levels. One might expect these differences to engender different patterns of job satisfaction. Based on a survey of several hundred fishermen, the paper compares clammers, scallopers, oystermen, druggers, longliners, and baymen with respect to thirty-three components of job satisfaction. Results show significant group-group contrasts in the nonmonetary rewards derived from fishing, even though all those surveyed were clearly 'commercial fishermen.'

For the past few years, we have been doing a survey on job satisfaction among commercial fishermen in New Jersey. The project has several potential applications in the realm of fisheries management, but here we relate our findings to more general concerns within anthropology. In particular, we consider whether participation in the subsistence activity of commercial fishing gives rise to a stable core of subjective responses or whether the particularities of different fisheries engender diverse patterns of response.

We introduce our study by situating it within the context of maritime anthropology. Then, we turn to our principal subject, which is comparing and contrasting the specific nature of job satisfaction in six New Jersey fisheries. Finally, we conclude with some general observations about the nonmonetary correlates of commercial fishing.

Fishing Cultures and the Culture of Fishing

In the literature dealing with fishing as a way of life, there are two kinds of ethnographies or approaches or emphases (Acheson 1981:275-76). On the one hand, there are *community studies* of fishing peoples, such as those by Firth (1946), Faris (1966), and Taylor (1983). On the other hand, there are studies that focus on the *activity of fishing* itself, such as those by Davenport (1960), Orbach (1977), Zulaika (1981), Pálsson and Durrenberger (1982, 1983; Durrenberger & Pálsson 1983, 1986), and Gatewood (1983, 1984). These two styles of research

are demarcated linguistically to the extent that people studying fishing communities tend to identify their specialty as 'maritime anthropology,' whereas those focusing on fishing as an activity tend to refer to their work as the 'anthropology of fishing.'

Estellie Smith's (1977) essay is a fairly well-known attempt to consolidate the field of maritime anthropology by identifying the essential commonalities of fishing cultures from around the world. The idea is that fishing cultures constitute a distinctive type, on a par with hunting and gathering or pastoralist or peasant (see, also, Andersen & Wadel 1972; Leap 1977). 'Fishing cultures,' thus, refers to whole-culture patterns, in Kroeber's (1948:316) sense, and the question for maritime anthropology is do communities based on fishing as a major subsistence activity develop a distinctive mode of living in and understanding of the world.

By contrast, those interested in fishing as an activity seldom address the total culture of fishermen. Instead, they concentrate on the specific knowledge, beliefs, and values fishermen use when fishing. The object of study is not so much the total lifeways of fishermen, their onshore as well as offshore behavior, but the 'culture of fishing,' which is an occupational or partial culture.

Our study of fishermen's job satisfaction falls into this latter camp. Our objective is to describe an important aspect of the culture of fishing, especially as this varies with differences in the basic mode of production among different fisheries.

The New Jersey Fisheries Survey

Job satisfaction is a multi-dimensional phenomenon, which makes quantification in terms of a single unit-measure very difficult if not impossible (Pollnac & Littlefield 1983). Although some researchers have tried to establish the "dollar value of an angler's day" (e.g., McFadden 1969; Gordon, Chapman & Bjornn 1973), our research takes a different approach and is geared to discovering the qualitative components of fishermen's job satisfaction and the relative importance of these in different fisheries.

New Jersey is an ideal location to do this kind of comparative study for several reasons. First, commercial fishing is a major industry in New Jersey. For example, based on the average dollar value of landings since 1974, Cape May/Wildwood is the third largest seafood port on the East Coast. Second, there are many different fisheries within a fairly small geographical area, ranging from small-scale estuarine fishing to offshore dredging, trawling, and longlining. And third, the possible confounding effects of community and ethnicity are relatively unproblematic in New Jersey because the various fisheries are dispersed among several multi-fishery, multi-ethnic ports.

Our survey includes six fisheries – sea clammers, scallopers, oystermen, draggers, longliners, and baymen. As the following brief descriptions indicate, these fisheries differ from one another in several ways.

Sea clamming is a dredging operation involving fairly large boats (ca. 82 feet)

and crews of 4-5 people, captain included. When going after surf clams, the boats fish just a couple of miles offshore, but when going after quahogs, they go out 30-40 miles. The catch is unloaded each day, and this sort of shellfishing can be done virtually all year.

Scalloping is also a dredging operation involving large boats (ca. 86 feet). The crews are larger than in clamming, however, because the boats stay out a week or two before returning to port, and the larger crews are needed to work in daily shifts. Scalloping can be done virtually all year.

Oyster dredging in Delaware Bay is a seasonal fishery lasting only 4-6 weeks in the spring. The boats average about 69 feet in length and have crews of 5-8 people. Today, there seems to be little mobility in and out of this fishery, and although captains have fishery-related work most of the year, their crews tend to view oystering as seasonal work.

Dragging, also called trawling, requires crews of 5-6 people and is a mobile-gear netfishery. Fairly large boats (ca. 78 feet) pull otter trawls behind them, catching anything a few fathoms up from the bottom. Depending on the time of year, draggers go after porgies, fluke, whiting, or squid, and the boats range several hundred miles up and down the Eastern Seaboard. Fishing trips last from two to three days up to ten days, depending on the prey species.

Longlining is a variety of hook-and-line fishing. Crews of 4-6 people lay out 30-40 miles of gear as evening approaches, then during the daylight hours cruise along removing the catch and baiting new hooks. The primary species are either tilefish or swordfish and tuna. Tilefishermen tend to fish about 200-300 miles off the Jersey shore and return to port every week or so. Swordfishermen may travel as far as Greenland or Puerto Rico on month long voyages.

Unlike the other fisheries, baymen tend to work alone in small outboard-powered boats and in the estuaries rather than out in the ocean proper. They often fish for a variety of species during the year, including especially bay clams and fluke. Because of their close proximity to shore, some baymen hold full-time jobs and fish after work or on weekends. Others would identify themselves as full-time fishermen.

Method

We use the 'docksides intercept' method in our survey, which means that we go to the fishing docks to find people willing to undergo an interview lasting from twenty minutes to an hour and a half, including filling out our 12-page questionnaire. The fishermen were remarkably cooperative, with less than 10% of those asked to participate refusing.

The questionnaire is given in two parts. The first part, completed by the fisherman himself, consists of 33 specific job satisfaction questions where the answers range on a 1-to-5 scale from 'very dissatisfied' to 'very satisfied.' The first part concludes with three overall questions about job satisfaction, two questions about other economic opportunities, and three questions about how his family views his work. These questions are, for the most part, the same as used in the

job satisfaction studies among fishermen in New England (Pollnac & Poggie 1979) and in Nova Scotia (Apostle, Kasdan & Hanson 1985). The second part, administered by the interviewer, asks a wide range of biographical-demographic questions.

The most general hypotheses of the research are that features of job satisfaction should correlate with: (1) objective characteristics of the various fisheries, and (2) biographical/demographic characteristics of the fishermen. Here, we summarize findings on job satisfaction as these correlate with two important variables: fisheries and status on board. As will be shown, both of these independent variables are significant in explaining variability among fishermen's subjective response to their work. That is, the fishery in which one works and one's status on board create significantly different work experiences, and these differences give rise to different levels and patterns of job satisfaction.

The Sample

The survey spanned three years, beginning in June of 1984 and ending in May of 1986, with the large majority of interviews being done in the summer months (June, July, and August). During this time, a total of 401 commercial fishermen completed both parts of the questionnaire. With an 'incidental catch' of nine purse seiners and one gillnetter excluded from further analyses, the final sample size is, thus, 391 fishermen.

To achieve as representative a sample as possible for each fishery, we tried to interview three individuals from each boat encountered at the docks: the captain and two crew members (including the first mate when possible). If a given vessel had alternating captains and crews, these 'shifts' were considered independent for sampling purposes. Although compliance with these rules-of-thumb was not always feasible, the final sample of 391 does conform to the design rather well. Table 1 shows the breakdown of the sample by fishery and status on board, as well as the number of boats represented for each fishery. (Note that the status 'one-man' applies only to bayfishermen and that the issue of boat representation does not apply to this fishery.)

Table 1. The Sample by Status and Fishery

	Clam	Scallop	Oyster	Dragger	Longline	Bay
Captain	25	22	24	26	20	-
Mate	14	12	1	10	11	-
Crew	29	41	25	42	19	-
One-Man	-	-	-	-	-	70
(Boats)	(30)	(24)	(26)	(34)	(19)	(-)

Table 2. Demographic Characteristics of the Sample

Ethnic/Racial Background			Age distribution		
(n = 382)	Freq.	%	(n = 391)	Freq.	%
Western European	166	43.5	10-20	20	5.1
"White American"	138	36.1	20-29	171	43.7
Black	30	7.9	30-39	95	24.3
Mediterranean	15	3.9	40-49	50	12.8
Eastern European	13	3.4	50-59	36	9.2
Amerindian	2	0.5	60-69	10	2.6
Jewish	1	0.3	70-79	7	1.8
Asian	1	0.3	80-89	2	0.5
Near Eastern	1	0.3			
Other	15	3.9			
			Education		
			(n = 391)	Freq.	%
			8 or less yrs	46	11.8
			9-12 yrs	251	64.2
			13-16 yrs	89	22.8
			17 or more yrs	5	1.3
			Percent of Income from Fishing		
			(n = 391)	Freq.	%
			less than 25%	40	10.2
			25%-50%	24	6.1
			50%-75%	27	6.9
			more than 75%	300	76.7
			Total Income from Fishing		
			(n = 351)	Freq.	%
			less than \$10,000	82	23.4
			\$10,000-\$14,999	36	10.3
			\$15,000-\$19,999	41	11.7
			\$20,000-\$24,999	43	12.3
			\$25,000-\$29,999	49	14.0
			\$30,000-\$34,999	27	7.7
			\$35,000-\$49,999	42	12.0
			\$50,000 or more	31	8.8
			Number of Children		
			(n = 390)	Freq.	%
			None	156	40.0
			Yes [avg = 2.47]	234	60.0

Demographic Summary

Table 2 shows some of the basic demographic characteristics of the sample as a whole. The respondents are preponderantly of Western European ethnic origins or simply 'White Americans' (the 30 Blacks are involved mostly in oyster dredging in Delaware Bay) and born within the three-state area of New Jersey, Pennsylvania, and New York. Sixty-eight percent are in their twenties or thirties, and there are very few fishing women (only 5 of 401). Roughly half of the sample are currently married, and of the 60% who have children, the average number of children is 2.47. On average, the New Jersey commercial fisherman has completed 11.5 years of formal education.

Over three-quarters of those interviewed are 'full time' fishermen in the sense that their earnings from fishing constitute more than 75% of their annual incomes. The average income is about \$22,400 from an average of 9.5 months of fishing.

There are statistically significant contrasts in education level, age, and income derived from fishing across the six fisheries (see Table 3). Speaking generally,

Table 3. Education, Age, and Fishing Income by Fishery

Education		Percent of Income from Fishing			
	n	Mean		n	Mean
Clammer	(68)	11.3 yrs	Clammer	(68)	80.9%
Scalloper	(75)	11.6 yrs	Scalloper	(75)	82.5%
Oysterman	(50)	10.2 yrs	Oysterman	(50)	54.0%
Dragger	(78)	11.3 yrs	Dragger	(78)	84.0%
Longliner	(50)	12.7 yrs	Longliner	(50)	73.5%
Bayman	(70)	12.0 yrs	Bayman	(70)	67.5%
[F = 6.391, p = 0.000] *		[F = 14.838, p = 0.000] *			
Age		Earnings from Fishing			
	n	Mean		n	Mean
Clammer	(68)	32.7 yrs	Clammer	(65)	\$27,700
Scalloper	(75)	30.2 yrs	Scalloper	(75)	\$23,800
Oysterman	(50)	43.5 yrs	Oysterman	(49)	\$14,600
Dragger	(78)	33.9 yrs	Dragger	(70)	\$25,700
Longliner	(50)	29.4 yrs	Longliner	(50)	\$24,000
Bayman	(70)	36.0 yrs	Bayman	(52)	\$15,500
[F = 9.303, p = 0.000] *		[F = 14.038, p = 0.000] *			

longliners have the most years of formal education and oystermen the least. Oystermen are typically older than other fishermen, and longliners are the youngest group. Clammers, scallopers, draggers, and longliners depend on fishing as their source of income more than oystermen and baymen, and they make considerably more money as well.

Contrasting the same demographic variables across four status categories, there are significant differences with respect to age and fishing income, but not with respect to education level (see Table 4). As expected, captains of fishing boats tend to be older than their crews, depend more heavily on fishing for their incomes, and make more money. An interesting point is that even crew members make more money from fishing than do the one-man baymen operations, even though both groups depend on fishing to the same extent (ca. 68%).

The six fisheries differ significantly in terms of the size and power of their vessels and in terms of several personnel variables dealing with fishing experience (see Table 5). Although the average age at which fishermen began fishing commercially is roughly the same across fisheries, fishermen contrast markedly with respect to their years of fishing experience, the number of boats they have worked on, the number of different fisheries they have tried, and the number of fisheries tried within the previous twelve months. Oystermen (who are generally older) have the most years of experience, and longliners the least. Draggers, scallopers,

Table 4. Education, Age, and Fishing Income by Status

Education		Percent of Income from Fishing			
	n	Mean		n	Mean
Captain	(117)	11.3 yrs	Captain	(117)	83.3%
1st Mate	(48)	11.3 yrs	1st Mate	(48)	82.3%
Crew	(156)	11.5 yrs	Crew	(156)	70.0%
One-Man	(70)	12.0 yrs	One-Man	(70)	67.5%
[F = 1.246, p = 0.293]		[F = 10.569, p = 0.000]			
Age		Earnings from Fishing			
	n	Mean		n	Mean
Captain	(117)	38.9 yrs	Captain	(111)	\$31,100
1st Mate	(48)	29.8 yrs	1st Mate	(44)	\$23,800
Crew	(156)	30.8 yrs	Crew	(144)	\$17,800
One-Man	(70)	36.0 yrs	One-Man	(52)	\$15,500
[F = 11.919, p = 0.000]		[F = 47.133, p = 0.000]			

Table 5. *Hardware and Personnel Variables by Fishery*

	Clam	Scallop	Oyster	Dragger	Lngline	Bay	F prob
HARDWARE							
Boat Length	82 ft	86 ft	69 ft	78 ft	69 ft	19 ft	.000 ^a
Horsepower	404 hp	631 hp	176 hp	576 hp	496 hp	79 hp	.000 ^a
PERSONNEL							
Age When Began	19.85	17.49	18.08	17.77	19.46	18.59	.385 ^b
Years Fishing	12.42	11.80	25.18	14.72	9.62	16.56	.000 ^b
No. Boats	9.63	15.91	9.74	12.01	6.80	6.00	.000 ^b
No. Fisheries	3.35	3.41	2.56	3.46	2.70	2.04	.000 ^b
Fisheries Tried Last Year	1.31	1.65	1.44	1.35	1.28	1.20	.001 ^b
No. Fishing Kin	3.53	3.27	4.30	4.00	1.78	3.73	.025 ^b

^a Significance computed excluding Baymen.

^b Significance computed including Baymen.

and sea clammers have the most varied fishing histories: they have worked on more boats and tried more fisheries than the other fishermen.

Direct Comparisons of Fishing with Non-Fishing Work

As an initial indication of fishermen's levels of job satisfaction, let us summarize their direct comparisons of fishing with other kinds of work.

We asked first whether they had had much experience doing other sorts of work and, if yes, whether they think fishing is better, about the same, or worse than their previous jobs with respect to four general concerns: earnings, enjoyment of the work itself, having time for other things, and overall satisfaction.

Roughly 70% of the 315 fishermen who had experience doing at least one kind of non-fishing work responded that fishing is better with respect to their earnings, their enjoyment of the work itself, and their overall satisfaction. Other jobs, however, were better than fishing with respect to having time for other things (see Table 6A). The same pattern of responses held true for a smaller subsample of 189 who compared fishing with a second kind of non-fishing work (see Table 6B).

When the direct comparisons are broken down by fishery, there are significant differences with respect to the earnings question and having time for other things, but not with respect to enjoyment of the work itself or overall satisfaction (see Table 7). In particular, fishing is less lucrative for baymen, compared to other jobs they have had, than it is for other groups of fishermen. And, 62% of the baymen think fishing is better than previous jobs in terms of having time for other activities, whereas scallopers, longliners, and draggers think exactly the reverse.

Table 6. *Comparison of Fishing with Non-Fishing Work*

A. Job 1			
Comparison(n = 315)	Fishing is better	They are about the same	Job 1 was better
Earnings	71%	14%	15%
Enjoyment of work itself	71%	18%	11%
Time for other things	35%	17%	48%
Overall satisfaction	74%	18%	8%
B. Job 2			
Comparison(n = 189)	Fishing is better	They are about the same	Job 2 was better
Earnings	80%	9%	11%
Enjoyment of work itself	61%	27%	12%
Time for other things	30%	20%	50%
Overall satisfaction	70%	19%	11%

Comparing the responses of three status groups – i.e., captains versus mates versus crew members – reveals significant differences with respect to enjoyment of the work itself and overall satisfaction (fishing vs. non-fishing), but not with respect to earnings or time for other things (see Table 8). Put simply, captains derive relatively more intangible satisfaction from fishing than do their mates and crew, although all three groups like fishing much more than non-fishing work.

A second general indication of fishermen's attachment to fishing comes to light from their responses to questions about non-fishing economic opportunities.

We asked how long they estimate it would take to find some kind of nonfishing work and how long it would take to find some kind of work that they would enjoy as much as fishing. Response categories were as follows: (1) a few days, (2) a few weeks, (3) a few months, (4) a year or longer, and (5) never. We then computed what may be called the 'psychic cost' of leaving fishing by simply subtracting their first response from the second.

Table 9A presents the findings broken down by fishery. Whereas there are significant differences among the six fisheries in terms of their perceived non-fishing economic opportunities and how long it would take to find work as enjoyable as fishing, the psychic cost is roughly the same, irrespective of current fishery.

Comparing these matters by status, we find that perceived non-fishing eco-

Table 7. Comparison of Fishing with Job 1 by Fishery

Comparison		Fishing is better	They are about the same	Job 1 was better
EARNINGS				
Clam	(59)	88%	7%	5%
Scallop	(56)	71%	18%	11%
Oyster	(35)	63%	14%	23%
Dragger	(62)	84%	10%	6%
Longliner	(42)	66%	24%	10%
Bay	(61)	48%	18%	34%
[F = 7.988, p = 0.000] *				
ENJOYMENT OF WORK ITSELF				
Clam	(59)	66%	22%	12%
Scallop	(56)	64%	23%	13%
Oyster	(35)	71%	12%	17%
Dragger	(62)	71%	21%	8%
Longliner	(42)	74%	16%	10%
Bay	(61)	79%	11%	10%
[F = 0.553, p = 0.736]				
TIME FOR OTHER THINGS				
Clam	(59)	41%	15%	44%
Scallop	(56)	11%	27%	62%
Oyster	(35)	46%	11%	43%
Dragger	(62)	29%	11%	60%
Longliner	(42)	17%	14%	69%
Bay	(61)	62%	20%	18%
[F = 10.868, p = 0.000] *				
OVERALL SATISFACTION				
Clam	(59)	70%	27%	3%
Scallop	(56)	66%	23%	11%
Oyster	(35)	77%	9%	14%
Dragger	(61)	74%	16%	10%
Longliner	(42)	74%	14%	12%
Bay	(61)	82%	15%	3%
[F = 0.878, p = 0.496]				

* Significant at $p < .0125$ (i.e., 'experiment-wise' adjusted).

Table 8. Comparison of Fishing with Job 1 by Status (no Baymen)

Comparison		Fishing is better	They are about the same	Job 1 was better
EARNINGS				
Captain	(76)	79%	12%	9%
1st Mate	(39)	77%	10%	13%
Crew	(139)	75%	16%	9%
[F = 0.138, p = 0.871] *				
ENJOYMENT OF WORK ITSELF				
Captain	(76)	83%	13%	4%
1st Mate	(39)	61%	26%	13%
Crew	(139)	63%	22%	15%
[F = 5.451, p = 0.005] *				
TIME FOR OTHER THINGS				
Captain	(76)	38%	16%	46%
1st Mate	(39)	31%	13%	56%
Crew	(139)	22%	17%	61%
[F = 3.303, p = 0.038] *				
OVERALL SATISFACTION				
Captain	(75)	84%	13%	3%
1st Mate	(39)	64%	28%	8%
Crew	(139)	67%	19%	14%
[F = 4.818, p = 0.009] *				

* Significant at $p < .0125$ (i.e., 'experiment-wise' adjusted).

conomic opportunity is roughly the same for captains, mates, and crew (see Table 9B). But, captains would experience more of a psychic cost than mates, and mates more than crew, if they were forced out of fishing.

One last consideration, before moving on to look at specific levels and patterns of job satisfaction, is the image or desirability different fisheries have among fishermen.

We asked each person, "What is your favorite kind of fishing, whether you have actually tried it or not?" Table 10A shows the responses broken down by current fishery. Roughly two-thirds of those interviewed (i.e., 250) are currently

Table 9. *Estimates of Non-Fishing Economic Opportunity by Fishery and Status (no Baymen)*

A. By Fishery

Item	Clam (63)	Scallop (74)	Oyster (48)	Dragger (77)	Longline (49)	Bay (70)	F prob
Scale = (1) a few days -- (5) never							
A. Time to find other work	1.71	1.93	2.43	2.06	1.78	2.37	.003*
B. Time to find as enjoyable work	2.95	2.81	3.50	3.30	3.02	3.66	.009*
C. 'Psychic cost' of not fishing	1.17	.86	1.04	1.22	1.31	1.29	.437

B. By Status

Item	Captain (115)	1st Mate (46)	Crew (150)	F prob
Scale = (1) a few days -- (5) never				
A. Time to find other work	2.05	1.74	1.98	.327
B. Time to find as enjoyable work	3.52	3.05	2.83	.001*
C. 'Psychic cost' of not fishing	1.45	1.22	.82	.001*

participating in their favorite form of fishing, whereas about one-third (i.e., 126) would rather be doing some other kind of fishing. What is interesting here is the different percentages of 'contented' fishermen in each of the six fisheries and the preferences of those who are 'discontented' with their current fishery (see Table 10B).

Three basic patterns are evident. Dragging, longlining, and sea clamming are fisheries with high percentages of contented fishermen, and they are also fisheries others would like to be doing. Conversely, scalloping and oystering have few contented fishermen, and few others want to do them. Lastly, bayfishing has a high percentage of contented workers, but few others are interested in it.

Those familiar with the ethnographic realities of the different fisheries will find the patterns noted above quite understandable. Dragging, longlining, sea clamming, and scalloping contrast with oystering and bayfishing in being larger-scale, open ocean, year round, and relatively lucrative operations. Scalloping differs from its counterparts, however, in terms of the work schedule - two week trips with large crews working in shifts. Thus, although scallopers make good

Table 10. *Fishermen's Favorite Kind of Fishing*

A. Favorite Fishery by Current Fishery

FAVORITE FISHERY	CURRENT FISHERY						
	Clam	Scallop	Oyster	Dragger	Longline	Bay	
Clam	50	4	11	2	0	1	68
Scallop	2	26	0	0	0	1	29
Oyster	0	0	20	0	0	2	22
Dragger	5	22	4	63	3	4	101
Longline	5	11	0	2	39	4	61
Bayfishing	0	1	1	2	1	52	57
Lobster	3	1	0	0	0	1	5
Pure seine	0	2	0	2	0	0	4
Gillnet	1	2	4	5	1	0	13
Trolling	1	0	0	0	2	1	4
Other	0	4	6	1	1	0	12
	67	73	46	77	47	66	376

B. Favorite Fisheries as Evidenced by 'Contentedness' and the Preferences of 'Discontented' Fishermen

	FISHERY						
	Clam	Scallop	Oyster	Dragger	Longline	Bay	'Other'
% 'contented' with current fishery	75%	36%	44%	82%	83%	79%	-
Preferences of the 126 'discontents'	14%	3%	2%	30%	17%	4%	30%

money, the living conditions on board are unpleasant, and other fishermen realize this. Conversely, the oyster fishery of Delaware Bay, lasting only a few weeks per year, is not especially attractive to those who want to fish full time and make more money, and many oystermen would prefer to do open ocean fishing, but find entry into such fisheries difficult. Finally, bayfishing, being a one-man operation, is attractive to those who value personal freedom more highly than making money. Further, because it involves relatively little capital investment, those who become discontented with crew life and the temporal demands of the other fisheries can easily set themselves up as baymen. In other words, the ready

accessibility of bayfishing tends to make it the most self-selecting fishery of those in the sample.

Summarizing to this point, it is clear that fishermen generally like fishing much better than other forms of work they have tried. The strength of these feelings are variable, both by fishery and by status group. They would experience considerable 'psychic' cost if they were forced to get out of fishing. And, those fisheries with the highest levels of contentedness also tend to be those considered most desirable by discontented fishermen.

Specifics of Fishermen's Job Satisfaction

The specific features of fishermen's job satisfaction were measured by responses to 33 items (see Table 11). The items selected include the 22 used by Pollnac and Poggie (1979) and the 26 used by Apostle, Kasdan, and Hanson (1985) with a few additional questions we thought relevant. Both previous surveys used factor analysis to describe their job satisfaction findings. We are currently in the midst of similar analyses and will write a separate paper comparing fishermen from New Jersey, New England, and the Canadian Maritimes as well as contrasting the results different statistical methods produce. Here we report our findings in a different form.

To simplify the complexity of the multi-item responses, as well as to make them relate to larger theoretical issues in the study of job satisfaction, we organized the 33 specific items according to Maslow's (1954) 'hierarchy of needs.' Maslow divides people's needs into several broad categories, which, in his view, must be satisfied sequentially. Survival/security needs are the most basic, and their fulfillment is necessary before other, higher level needs become much of concern. Belongingness/esteem, or social, needs are the next most basic. Finally, if the previous needs are fulfilled sufficiently, people require a sense of personal fulfillment and growth, that is, self-actualization needs are at the top of the hierarchy. The assignment of our 33 items to these categories was done in consultation with Thomas Blank and Robert Rosenwein, social psychologist colleagues, and is presented in Table 12.

By-item analyses of variance show that 23 of the 33 items evidence significant contrasts in their average levels of satisfaction across the six fisheries at the $p < .05$ confidence level. This customary confidence level, however, does not take into account the number of statistical tests being done. If twenty analyses of variance (or any other statistical test) are performed, we should expect one of them to show statistical significance at the .05 level purely by chance. It is thus necessary to correct for the number of tests being done. 'Experiment-wise' adjustments are calculated by dividing the customary confidence level by the number of tests. Using the more stringent cutoff of $p < .0015$ (i.e., .05 divided by 33), 15 items still evidence significant differences in levels of satisfaction. Table 13 shows the average by-item levels of satisfaction for each of the six fisheries, with the items grouped according to their Maslow assignments.

Similar by-item comparisons of the three status groups (the one-man baymen

Table 11. *Specific Measures of Job Satisfaction Used in the Study*

Pollnac & Poggie	Apostle, et al.	V	Specific Items (1 to 5 scale)
yes	yes	1	Physical demands
no	yes	2	Fellow workers
yes	yes	3	Mental pressure
yes	yes	4	Healthfulness
yes	yes	5	Performance of officials
no	yes	6	Crowding on fishing grounds
yes	yes	7	Challenge
yes	yes	8	Predictability of earnings
no	no	9	Work schedule (daily, weekly)
yes	yes	10	Community where you live
yes	yes	11	Time for family & recreation
yes	yes	12	Doing deck work
yes	yes	13	Adventure
yes	yes	14	Time to fishing grounds
yes	yes	15	Time you get to fish
yes	yes	16	Amount of earnings
yes	yes	17	Being out on the water
yes	yes	18	Job safety
no	yes	19	Living conditions on board
yes	yes	20	Come and go as you please
yes	yes	21	Time away from home
yes	yes	22	Opportunity to be own boss
no	no	23	Pitting skill against nature
yes	yes	24	Peace of mind
no	no	25	Respect as a fisherman
yes	yes	26	Working outdoors
no	yes	27	Trip length (dock to dock)
yes	yes	28	Cleanliness
no	no	29	Competing with others
no	no	30	Identity as a fisherman
yes	yes	31	Doing something worthwhile
no	no	32	Future as a fisherman
no	no	33	Earnings last trip
			Global Question
no	yes	34	Overall satisfaction (1 to 7)
yes	yes	35	Life to life over (1 to 3)
yes	yes	36	Advise friend to fish (1 to 3)

Table 12. Assignment of Specific Items to Maslow's Categories

SURVIVAL/SECURITY NEEDS	BELONGINGNESS/ESTEEM NEEDS
Job safety	Community where you live
Physical demands	Competing with others
Cleanliness	Fellow workers
Healthfulness	Respect as a fisherman
Future as a fisherman	Trip length (dock to dock)
Mental pressure	Time to fishing grounds
Peace of mind	Work schedule (daily, weekly)
Living conditions on board	Opportunity to be own boss
Predictability of earning	Come and go as you please
Amount of earnings	Time away from home
Performance of officials	Time for family & recreation
Time you get to fish	
Crowding on fishing grounds	
SELF-ACTUALIZATION NEEDS	
Working outdoors	
Doing something worthwhile	
Identity as a fisherman	
Doing deck work	
Being out on the water	
Challenge	
Adventure	
Pitting skill against nature	

operations being excluded) show fewer contrasts than exist among fisheries. The average satisfaction levels of captains, mates, and crew members differ with simple statistical significance on only 11 items, and only 4 of these achieve experiment-wise significance – “performance of officials,” “pitting skill against nature,” “competing with others,” and “opportunity to be your own boss” (see Table 14).

Using the a priori assignment of items to Maslow's categories, three composite-indices were computed for each respondent. These indices are defined as the simple sum of an individual's responses to constituent items divided by the number of items in a category, that is, there was no weighting of items within a category.

Table 15A shows the average level of satisfaction for the three Maslow-indices for the six fisheries. The most general point to note is the high levels of satisfaction evidenced in all three areas. In view of Lee Anderson's (1980) and Courtland Smith's (1981) arguments concerning job satisfaction and fisheries management, it is especially interesting that the highest levels of satisfaction occur with respect to the most intangible of rewards, i.e., Maslow's category of self-

Table 13. Levels of Job Satisfaction by Fishery (Items Grouped into Maslow's Categories)

Item	Clam (68)	Scallop (75)	Oyster (50)	Dragger (78)	Lngline (50)	Bay (70)	F prob
Scale = (1) very dissatisfied -- (5) very satisfied							
SURVIVAL/SECURITY							
Physical demands	3.74	3.95	3.73	3.83	3.88	3.77	.683
Job safety	3.46	3.56	3.76	3.74	3.55	3.74	.284
Cleanliness	3.72	3.65	3.92	3.85	3.50	3.61	.173
Future as a fisherman	3.68	3.39	3.61	3.36	3.36	3.03	.036
Healthfulness	3.77	4.09	4.12	4.13	4.00	4.30	.033
Mental pressure	3.43	3.40	3.78	3.42	3.46	3.86	.022
Peace of mind	3.79	3.74	3.90	3.90	3.86	4.28	.015
Living conditions on board	3.82	3.96	3.74	4.01	3.84	3.51	.012
Predictability of earnings	3.57	3.05	2.98	2.90	3.08	3.51	.001*
Earnings last trip	3.94	3.43	3.33	2.97	3.50	3.53	.000*
Amount of earnings	4.00	3.48	3.38	3.09	3.72	3.59	.000*
Performance of officials	2.04	2.18	3.42	2.07	2.08	2.40	.000*
Time you get to fish	2.56	3.60	3.70	3.56	3.65	3.74	.000*
Crowding on fishing grounds	3.45	2.51	3.84	2.56	2.46	2.76	.000*
BELONGINGNESS/ESTEEM							
Community where you live	4.16	4.08	3.92	4.21	3.98	3.96	.289
Competing with others	3.82	3.84	3.83	4.05	3.94	3.64	.052
Fellow workers	4.12	3.65	3.90	3.88	3.98	3.71	.026
Respect as a fisherman	3.47	3.32	3.90	3.23	3.54	3.24	.010
Trip length (dock to dock)	3.43	3.20	3.37	3.76	3.30	3.81	.000*
Time to fishing grounds	3.44	3.52	3.46	3.35	2.82	3.76	.000*
Work schedule (daily, weekly)	2.87	3.53	3.38	3.23	3.36	3.90	.000*
Opportunity to be own boss	3.84	3.95	4.11	3.88	3.94	4.54	.000*
Come and go as you please	3.24	3.69	3.94	3.74	3.50	4.37	.000*
Time away from home	3.29	2.70	3.41	3.06	2.44	3.83	.000*
Time for family & recreation	3.21	2.62	3.75	2.61	2.42	3.71	.000*
SELF-ACTUALIZATION							
Working outdoors	4.53	4.45	4.45	4.50	4.62	4.57	.573
Doing something worthwhile	4.13	4.04	3.94	4.01	4.24	4.10	.387
Identity as a fisherman	3.99	3.99	3.98	4.10	4.00	3.77	.256
Doing deck work	3.59	3.72	3.82	3.94	3.80	3.63	.117
Being out on the water	4.34	4.11	4.20	4.21	4.14	4.46	.084
Challenge	4.10	4.16	3.82	4.12	4.44	4.17	.015
Adventure	3.99	4.15	3.75	4.16	4.52	4.12	.000*
Pitting skill against nature	4.04	4.04	3.42	4.01	4.16	4.23	.000*

* Significant at $p < .0015$ (i.e., 'experiment-wise' adjusted).

Table 14. *Levels of Job Satisfaction by Status, No Baymen (Items Grouped into Maslow's Categories)*

Item	Captain (117)	1st Mate (48)	Crew (156)	F prob
Scale = (1) very dissatisfied - (5) very satisfied				
SURVIVAL/SECURITY				
Time you get to fish	3.41	3.46	3.36	0.820
Living conditions on board	3.91	3.94	3.86	0.811
Healthfulness	4.01	4.13	4.01	0.720
Peace of mind	3.85	3.91	3.79	0.694
Amount of earnings	3.58	3.60	3.44	0.477
Crowding on fishing grounds	3.03	2.77	2.88	0.266
Cleanliness	3.84	3.71	3.66	0.261
Future as a fisherman	3.62	3.44	3.37	0.206
Predictability of earnings	3.28	3.04	3.02	0.198
Physical demands	3.91	3.92	3.74	0.188
Mental pressure	3.32	3.49	3.59	0.092
Job safety	3.77	3.55	3.51	0.059
Earnings last trip	3.61	3.60	3.23	0.026
Performance of officials	2.13	1.94	2.55	0.001 *
BELONGINGNESS/ESTEEM				
Respect as a fisherman	3.44	3.63	3.42	0.508
Time to fishing grounds	3.44	3.25	3.30	0.434
Community where you live	3.99	4.19	4.13	0.260
Trip length (dock to dock)	3.53	3.29	3.39	0.251
Work schedule (daily, weekly)	3.44	3.29	3.13	0.086
Come and go as you please	3.82	3.54	3.48	0.041
Fellow workers	3.73	3.83	4.05	0.011
Time away from home	3.23	2.73	2.88	0.008
Time for family & recreation	3.09	2.43	2.86	0.008
Competing with others	4.16	4.04	3.66	0.000 *
Opportunity to be own boss	4.43	3.94	3.55	0.000 *
SELF-ACTUALIZATION				
Working outdoors	4.46	4.52	4.54	0.563
Adventure	4.11	4.31	4.05	0.126
Being out on the water	4.32	4.10	4.14	0.097
Doing something worthwhile	4.14	4.21	3.97	0.078
Doing deck work	3.87	3.88	3.66	0.063
Identity as a fisherman	4.15	4.06	3.90	0.029
Challenge	4.24	4.32	3.99	0.015
Pitting skill against nature	4.13	4.08	3.79	0.001 *

* Significant at $p < 0.0015$ (i.e., 'experiment-wise' adjusted).

actualization needs. The only statistically significant contrast among fisheries, however, occurs in the belongingness/esteem (social) index.

Table 15B shows the average level of satisfaction for the three Maslow-indices by status group (baymen excluded). There is no significant difference among captains, mates, and crew members with respect to their satisfaction with survival needs. They differ significantly, however, with respect to both belongingness/esteem needs and self-actualization needs, captains being more satisfied than crew, and first mates in between.

The statistical analyses summarized in this section show that different fisheries, and to a lesser extent the different status groups, evidence very different profiles of job satisfaction. A relatively easy and non-statistical way to get a sense of these profiles is to look at the items that provide the most and the least satisfaction. Table 16 shows, for each fishery, the 6 items receiving highest satisfaction ratings and the 6 items receiving lowest ratings.

One discernible trend evident in Table 16 is that those fishermen who stay out on the ocean for longer stretches of time tend to appreciate the 'romance of the sea' more than do shorter-trip fishermen. Longliners and scallopers (and to a

Table 15. *Maslow-Indices by Fishery and Status*

A. By Fishery

Maslow-Index	Clam	Scallop	Oyster	Dragger	Lnghline	Bay	F prob
Scale = (1) very dissatisfied - - (5) very satisfied							
Survival/Security	3.52 (61)	3.42 (71)	3.66 (45)	3.40 (74)	3.40 (41)	3.57 (62)	.034
Belongingness/Esteem	3.54 (67)	3.49 (69)	3.72 (44)	3.54 (77)	3.38 (50)	3.85 (69)	.000*
Self-Actualization	4.09 (66)	4.08 (73)	3.94 (46)	4.12 (75)	4.24 (50)	4.12 (67)	.062

B. By Status

Maslow-Index	Captain	1st Mate	Crew	F prob
Scale = (1) very dissatisfied - - (5) very satisfied				
Survival/Security	3.52 (109)	3.48 (41)	3.43 (142)	.332
Belongingness/Esteem	3.66 (114)	3.48 (46)	3.44 (147)	.001*
Self-Actualization	4.18 (114)	4.18 (47)	4.01 (149)	.006*

Table 16. *Items Showing the Most and Least Satisfaction by Fishery*

	Most Satisfied	Least Satisfied
Clammers	1 Working outdoors	28 Time away from home
	2 Being out on the water	29 Come and go as you please
	3 Community where you live	30 Time for family & recreation
	4 Doing something worthwhile	31 Work schedule (daily, weekly)
	5 Fellow workers	32 Time you get to fish
	6 Challenge	33 Performance of officials
Scalloper	1 Working outdoors	28 Trip length (dock to dock)
	2 Challenge	29 Predictability of earnings
	3 Adventure	30 Time away from home
	4 Being out on the water	31 Time for family & recreation
	5 Healthfulness	32 Crowding on fishing grounds
	6 Community where you live	33 Performance on officials
Oystermen	1 Working outdoors	28 Time away from home
	2 Being out on the water	29 Work schedule (daily, weekly)
	3 Healthfulness	30 Amount of earnings
	4 Opportunity to be own boss	31 Trip length (dock to dock)
	5 Identity as a fisherman	32 Earnings last trip
	6 Doing something worthwhile	33 Predictability of earnings
Draggers	1 Working outdoors	28 Time away from home
	2 Community where you live	29 Earnings last trip
	3 Being out on the water	30 Predictability of earnings
	4 Adventure	31 Time for family & recreation
	5 Healthfulness	32 Crowding on fishing grounds
	6 Challenge	33 Performance of officials
Longliner	1 Working outdoors	28 Predictability of earnings
	2 Adventure	29 Time to fishing grounds
	3 Challenge	30 Crowding on fishing grounds
	4 Doing something worthwhile	31 Time away from home
	5 Pitting skill against nature	32 Time for family & recreation
	6 Being out on the water	33 Performance of officials
Bayman	1 Working outdoors	28 Predictability of earnings
	2 Opportunity to be own boss	29 Living conditions on board
	3 Being out on the water	30 Respect as a fisherman
	4 Come and go as you please	31 Future as a fisherman
	5 Healthfulness	32 Crowding on fishing grounds
	6 Peace of mind	33 Performance of officials

lesser extent draggers and clammers) differ from baymen and oystermen in the satisfaction they derive from the "challenge" and "adventure" aspects of fishing. Longliners, in particular, seem to enjoy the strategic aspects of fishing, whereas baymen enjoy most the personal independence and freedom that their one-man operations provide.

Despite the differences, there are a few aspects of job satisfaction that characterize fishermen in general. "Working outdoors" is the highest ranking source of satisfaction in all six fisheries, and "performance of officials" ranks at the bottom for all except oystermen, who have a long history of successful dealings with fisheries biologists. Similarly, the physical setting and time demands of fishing – that is, being away from family, friends, and recreational opportunities – are uniformly regarded as major drawbacks to fishing as a kind of work, except for baymen, who return to port almost every day.

Table 17 presents the items that captains, mates, and crew members find most and least satisfying. Again, "working outdoors" is uniformly the most rewarding item, and "performance of officials" is at the bottom. Similarly, all statuses enjoy the challenge or adventure of fishing and dislike the unpredictability of their earnings and the separation from loved ones and/or recreational opportunities ashore. The different job responsibilities of the statuses are nonetheless reflected in the item rankings.

Captains enjoy what might be called the 'head game' of fishing and take con-

Table 17. *Items Showing the Most and Least Satisfaction by Status*

	Most Satisfied	Least Satisfied
Captains	1 Working outdoors	28 Mental pressure
	2 Opportunity to be own boss	29 Predictability of earnings
	3 Being out on the water	30 Time away from home
	4 Challenge	31 Time for family & recreation
	5 Competing with others	32 Crowding on fishing grounds
	6 Identity as a fisherman	33 Performance of officials
Mates	1 Working outdoors	28 Time to fishing grounds
	2 Challenge	29 Predictability of earnings
	3 Adventure	30 Crowding on fishing grounds
	4 Doing something worthwhile	31 Time away from home
	5 Community where you live	32 Time for family & recreation
	6 Healthfulness	33 Performance of officials
Crew	1 Working outdoors	28 Work schedule (daily, weekly)
	2 Being out on the water	29 Predictability of earnings
	3 Community where you live	30 Crowding on fishing grounds
	4 Adventure	31 Time away from home
	5 Fellow workers	32 Time for family & recreation
	6 Healthfulness	33 Performance of officials

siderable pride in being a fisherman. Correspondingly, the downside of their job is the mental pressure of making those same decisions. Mates, also, enjoy the challenge and adventure of fishing, but show stronger community attachments and concerns with healthfulness than do their captains. Crew members, who are cut off from the important decision-making, include the sociability of crew life (i.e., fellow workers) among the aspects providing most satisfaction. And, because they do the physical labor associated with shucking or icing the catch as well as the end of day clean up, they tend to resent the work schedule.

Finally, responses to our three overall, summarizing questions about job satisfaction show little difference between the fisheries. On a 1-to-7 scale (where 1 means "fishing is the worst kind of work" and 7 means "fishing is the best kind of work"), the average ratings ranged between 5.50 and 5.85, indicating that fishermen are generally quite satisfied. Similarly, when asked, "Knowing what you do now, if you had your life to live over, would you still go into fishing?," the average responses ranged between 2.53 and 2.69 (where 1 means "no," 2 means "maybe," and 3 means "yes"). Despite this general willingness to go into fishing again, all except oystermen and clambers would *not* recommend fishing

Table 18. Overall Levels of Job Satisfaction by Fishery and Status

A. By Fishery

Item	Clam (68)	Scallop (75)	Oyster (50)	Dragger (78)	Lngline (50)	Bay (70)
Scale = (1) the worst kind of work -- (7) the best kind of work						
All things considered	5.82	5.71	5.85	5.70	5.62	5.50
Scale = (1), no, (2) maybe, (3) yes						
Life to live over	2.62	2.56	2.67	2.53	2.54	2.69
Advise friend to fish	2.04	1.89	2.10	1.70	1.90	1.67

B. By Status

Item	Captain (117)	1st Mate (48)	Crew (156)
Scale = (1) the worst kind of work -- (7) the best kind of work			
All things considered	6.08	5.71	5.49
Scale = (1) no, (2) maybe, (3) yes			
Life to live over	2.69	2.52	2.51
Advise friend to fish	1.93	1.92	1.90

as a career to their friends (see Table 18).

The discrepancy between assessments of fishing as a good career for oneself and the advice one would give to friends is interesting. It may be related to perceptions of larger economic trends within the various fisheries.

Despite strong attachments to fishing as a way of life, or perhaps because of it, fishermen are generally pessimistic concerning the future of their occupation. Respondents were asked to rate on a 1-to-10 scale the economic conditions in their fisheries as they were five years ago, as they currently are, and to estimate how they will be five years into the future. As figure 1 shows, there is considerable variation among fisheries in these estimates, but all evidence a clear sense that things are getting worse. Thus, recommending a fishing career to friends would be poor advice, and for two reasons. Firstly, friends might not remain friends to someone who recommends a career with such an uncertain future. Secondly, if more people entered fishing, this would only aggravate matters by overcrowding the fisheries and accelerating their (perceived) decline.

Conclusions

Our survey reveals several general points about the culture of fishing. Firstly,

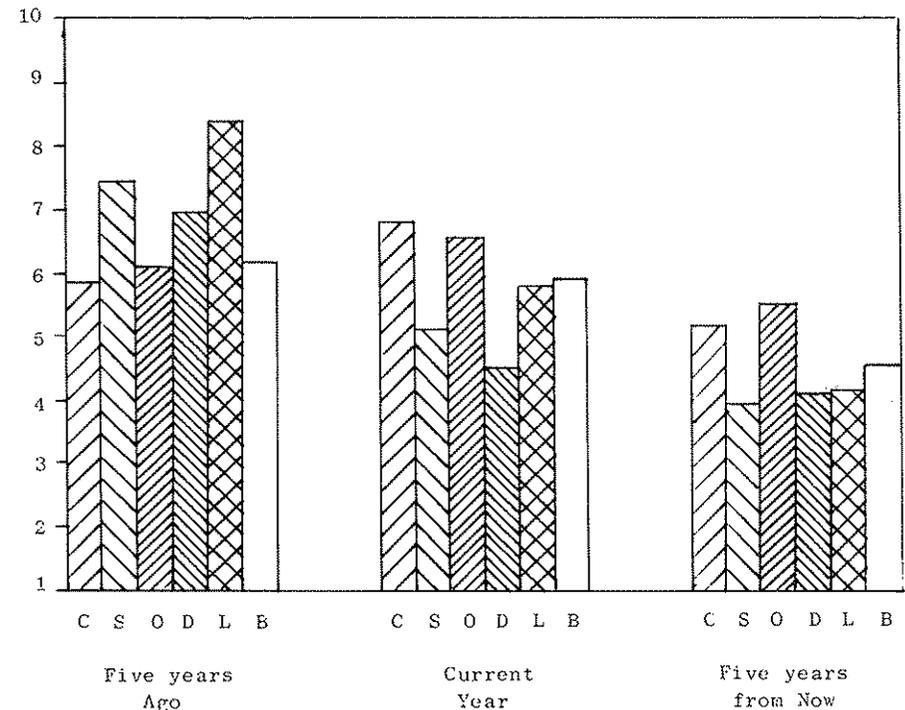


Figure 1. Estimates of Economic Conditions by Fishermen in Six N.J. Fisheries

fishermen derive a considerable 'satisfaction bonus' from their work. Fishing is not merely a means to an end, but is intrinsically rewarding. This shows up clearly when fishermen compare fishing with other work experiences and in the fact that fishermen are much more satisfied in terms of their self-actualization needs than they are with social or survival needs. Fishing is not just a livelihood, it is a way of life.

Secondly, despite a core of similar responses, the objective characteristics of different fisheries give rise to strongly significant contrasts with respect to a variety of specific job satisfaction items. These distinctive profiles are obscured by global, summarizing questions, but come to light when fishermen are asked a wide variety of specific questions. In other words, job satisfaction is truly multi-dimensional and attempts to reduce its complexity to a single measure are ill-advised.

Similarly, one's status on a boat significantly affects the nature of job satisfaction. In very broad terms, the more one is involved in the strategic aspects of fishing and has control over the means of production, the more rewarding the experience.

In conclusion, we hope that the foregoing analyses will lay to rest the notion that 'fishermen,' even 'commercial fishermen,' are a homogeneous group. Although perhaps useful when comparing fishing with other occupations, such a crude categorization glosses over very significant differences. The specific harvesting techniques, work schedule, and division of labor associated with different fisheries, as well as one's status on board, give rise to distinctive subjective responses.

Researchers should take this diversity of response into account when describing the culture of fishing. So, too, in the applied context of formulating regulatory policies, fisheries managers should consider not only how to achieve their conservation goals, but also the specific nonmonetary rewards of fishing as these vary among different fisheries. Given there are many ways to regulate fishing effort, i.e., many ways to achieve the conservation goals, managers should select those regulatory tactics that preserve as much as possible what fishermen like about their work.

Acknowledgments

This is a revised version of a paper presented at the annual meeting of the American Anthropological Association, December 5, 1986, Philadelphia, Pa.

The authors thank Lawrence Taylor for doing the interviews with Delaware Bay oystermen and Carolyn Reed and Joyce Tiemens, graduate research assistants, for their excellent work interviewing other fishermen.

This work is the result of research sponsored by NOAA, Office of Sea Grant, Department of Commerce, under Grant No. NA85AA-D-SG084, (Project No. R/F-18). The U.S. Government is authorized to produce and distribute reprints for governmental purpose notwithstanding any copyright notation that may appear hereon. This work is also sponsored by the New Jersey Agricultural Experiment Station, Publication No. D-26414-1-86, supported by State funds.

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Going Out or Staying Home

Seasonal Movements and Migration Strategies among Xwla and AnlQ-Ewe Fishermen¹

Paul Jorion

Maritime Fishing in the Gulf of Guinea: The Historical Context

Information on the development of maritime canoe fishing in the Gulf of Guinea is scanty and contradictory. It is in fact impossible to assess with any certainty whether or not a maritime fishery was in existence prior to the coming of European travellers and traders. A lagoon and riverine fishery was no doubt in operation at the time of the first contacts at the end of the fifteenth century. When particularly clement weather conditions allowed and where no surf-"bar" constituted an insuperable obstacle to small dug-out crafts, lagoon and riverine fishing techniques were probably occasionally practised at sea, as is still the case today.

Little more can be said. We have no evidence that the large dug-out canoes essential to the maritime fishing enterprise were in use as such in earlier times: references to such canoes² concern "war-boats" to be used only on rivers or in estuaries (Hargreaves 1984:6). Evidence relative to beach-seining at the time of the first contacts is controversial: some authors speculate that short lagoon dragnets in locally produced fibre may have been traditionally used for this purpose, while others suggest the deliberate introduction of the beach-seine by European settlers. Portuguese and Danes are mentioned in this respect. Local linguistic usage seems to confirm foreign introduction as a common name for the beach-seine in the region is "the white man's net" (AnlQ: *yévr-dQ*; Xwla: *yQvQ-dQ*; but also AnlQ: *puta* and Xwla: *agéne*. I am resorting to the type Q for the open o as in "otter").

Historical evidence converges in suggesting that common use of dug-out canoes in sea operations developed as a consequence of local involvement in commercial activities associated with unloading merchant vessels in a region largely lacking harbours. The presence of a surf-bar constituted a real danger for passengers and goods in inexperienced hands. The early reputation of Fante, "Kru" and "Popoh" as skilled sea-farers grew from their craftsmanship at unloading ships rather than from any special ability as maritime fishermen (Tonkin 1984).

Similarly, the first sizeable migrations of maritime populations were linked to such commercial activities rather than to the operation of a fishery. Developing undertakings in sheltered harbours (such as Cape coast) or the building of wharfs (Lomé, Cotonou, etc.) attracted populations of "specialist" unloaders; such moves being sometimes encouraged by private initiative or by the colonial authorities themselves (Pliya 1980:97-98).

The first authentic populations of maritime fishermen observed practising their activities on a regular basis belonged to groups who had emigrated in num-

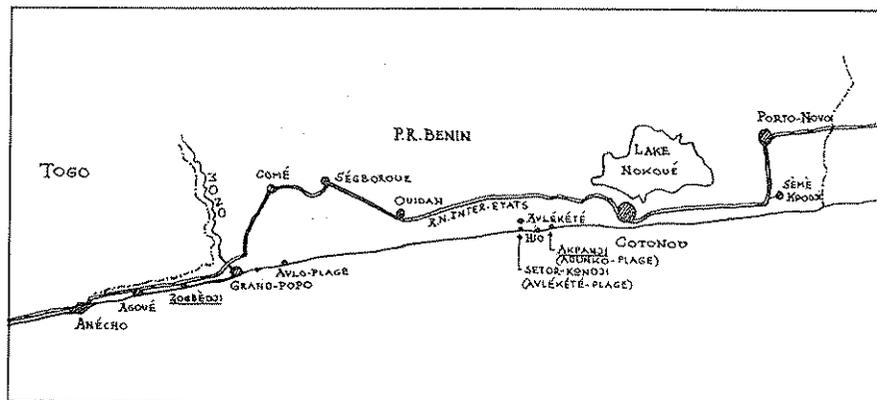
bers to become part of the ordinary manpower of a colonial port as “surfcrossers.” One can therefore accept the view that the properly maritime small-scale fishery in the Gulf of Guinea developed as a sideline of such commercial operations, using gear of European origin (or at least inspiration) rather than from any local adaptation of lagoon or riverine techniques (apart from the single hook and line)³.

As soon as larger canoes of Ghanaian make⁴ and fishing gear of imported twine (cotton, then nylon in the early nineteen-sixties) became more readily available, the coastal populations were faced with a choice of alternative orientations towards the rapidly developing maritime fishery: either to regard it as a seasonal occupation which could complement another still prevailing activity, or to turn to it as a full-time occupation.

The first attitude was adopted by most coastal populations who still had an important foothold in horticulture. Fishing at sea would be practised in the idle times left by the exploitation of land, but the latter activity would retain an absolute priority. A concomitant of this was that fishing would be a sedentary activity operated in the immediate vicinity of the home-village and implying neither emigration nor even seasonal movements; it would depend entirely on the momentary passage of large shoals of fish (essentially Clupeids, “herring,” and Carangidae, “horse-mackerel”).

The second orientation leading to maritime fishing as a full-time occupation was adopted first by the populations whom we saw specializing in the unloading of merchant vessels. In the process they had become increasingly dependent on the economic life of ports, having severed their links with the countryside thus irreversibly losing any access to land.

The contrast between the two orientations towards maritime fishing is particularly apparent where they have been adopted in the same location by different components of the population. Thus within a sixteen kilometres stretch of coast, between Dénou and Agouin in the PR Bénin, the population is divided into two



Gulf of Guinea Coast.

groups: on the one hand sixteen settlements (population 50 to 200) of alien Xwla and Ewe family ventures or “companies” living on the beach in palm-frond huts, on the other hand nine villages (population up to 700) of “indigenous” (of late eighteenth to early nineteenth century settlement) Fon families living in concrete houses with corrugated iron roofs on either side of the lagoon (here 50 to 500 m wide) that parallels the coast.

In fifteen out of the sixteen beach settlements, the main activity is maritime fishing, while in the remaining one it is coconut oil extraction. Among the nine lagoon villages maritime fishing is the main activity in only one; horticulture comes first in four villages, while lagoon fishing prevails in the other four. Salt production from boiling water washed through soil is the main female economic activity in four of these lagoon villages. The quantities produced are sometimes considerable (70 metric tons was brought to the market from Avlékété, the largest village in the zone, during a seventeen day period in March-April 1986; Atti Mama, pers. comm.)

This paper aims at shedding light to the seasonal movements and migration strategies of full-time fishermen along the West African coast. These phenomena cannot be understood without giving consideration to risk-minimizing strategies of the West African coastal population in their economic realm in general. Before going into these strategies, I will briefly present some information on the Xwla and Anlo-Ewe, upon which this paper focuses.

From the beginning of the twentieth century, the Fante turned massively to full-time maritime fishing, acting as spearhead of the movement and colonizing



West African Sea-going Fishing-canoes. Photo Birgit Meyer.

the coast from the Gambia to Pointe-Noire (Loango) in the Congo. Other ethnic groups who joined in the sea-fishing can be said to have learned the trade from the Fante. Among them are the Anlo-Ewe and the Xwla.

Anlo and Xwla are the names these two populations assign themselves. Among their neighbours, the Anlo are essentially known as "Kéta" from the name of the main town in the Anlo peninsula in Ghana. Similarly, the Xwla are commonly referred to as "Pla"; their place of origin being a sandy stretch between Grand-Popo and the outlet of the River Mono at Bouche-du-Roi both in the PR Bénin. The zones inhabited by the Anlo and the Xwla are therefore not contiguous: other Ewe groups populate the coast to the East of the Anlo peninsula, from Blékusu to Agbodrafo (Porto Seguro) in Togo. From there to the outskirts of Grand-Popo lies the "Mina" enclave which was successively colonized in the seventeenth century by Ga leaving Accra and in the early eighteenth century by a group of Fante from Elmina (Central Region of Ghana), hence the name "Mina". The "Mina" are sometimes referred to in the literature as Ané-Fante, Anéhó being a Togolese town near to the border with the PR Bénin. Anéhó was called "Petit-Popo" by the early European traders (*Xwla* vi as opposed to *Xwla* gan = Grand-Popo).

Although "Kéta" and "Pla" are clearly distinguished as ethnic groups in their countries of origin (Ghana, Togo, PR Bénin), in further locations where they have emigrated they are regarded as a single group, the "Popoh". Thus, as I was able to establish in 1985, at Pointe-Noire (PR Congo), the "Bénois" and "Popoh" labels are used as synonyms encompassing as well the Ghanaian Anlo-Ewe fishermen present there. The same applies to the West in Liberia where I established in 1986 that, in the absence of Xwla fishermen, the "Popoh" label applies exclusively to the Anlo-Ewe. Thus Popoh-beach in Monrovia has a mixed population of Anlo-Ewe and Kru, the latter having emigrated to the capital from Sinoe-County. In Liberia, Ewe fishermen are clearly distinguished as "Popoh" from the other Ghanaian fishermen (essentially Fante) on a professional basis, as is the case in Ghana, because they practise the beach-seine to the exclusion of any other gear (this is not the case for the eastward migrating Ewe who hold a high reputation as experts in the use of the purse-seine and the sardinella gill-net).

Risk-Minimizing Strategies Among Xwla and Anlo-Ewe

It is important first to have some global view of the economic logic prevailing among coastal West African populations living in a still underpopulated self-subsistence oriented milieu (the specificity of Anlo and Xwla circumstances being precisely that of localized overpopulation leading to a type of colonizing behaviour which runs counter to the traditional rules of land appropriation).

The fact that some households (essentially those of coconut plantation owners) devote their entire productive activity to cash-crops, and the concurrent fact that each household sells at least some of its products on the market, does not detract from the fact that the local rural economy remains in the absence of any

actual security in provisioning inceptively subsistence oriented.

Among the rural element of the population, any ranking of priorities puts subsistence crops, i.e., food-crops, first. It is only among that part of the urban population – however small – which has lost immediate access to food-crops that the accumulation of cash or money incomes is accorded priority. As has become clear in the recent literature on the ups and downs of the cash-crops economy (e.g. Yung 1985), populations massively involved in cash-crop production are quick to revert to subsistence-crops as soon as cash-cropping turns – because of fluctuations in price on the world-market – into a threat to subsistence. Also, within the category of food-crops itself, peasants rank these according to their yearly reliability under the whimsical and sometimes nefarious climatic circumstances of the region.

Just as portions of cash-crops – though only minimal – are retained for household consumption (there is neither cocoa nor cotton production in the coastal regions here described), under favourable circumstances surpluses may develop among households producing essentially for subsistence. This leads to inflationary gifts through the existing kinship and clientship networks as well as to an increasing part of the harvest finding its way to the market. The main "subsistence"-crops in the region under scrutiny are provided by horticulture and lagoon fishing. Maritime fishing, coconut oil extraction, shallot farming (Nukunya 1975; Hill 1986), production of salt and palm brandy (called *akpeteshie* in Ghana and *sodabi* in both Togo and the PR Bénin) are the main components of the cash-crop economy.

If, for the sake of simplicity, we consider the local inhabitant a "free economic agent" (being in a position to select his economic strategy on his own terms) he will no doubt choose to concentrate on horticulture as being the safest activity. He may try to complement this with some cash-crops (such as growing palm or coconut trees, or devote part of his time to the lagoon through the ownership of weirs, for instance, or maritime fishery). This is indeed what most of the lagoon villagers of the coast of the PR Bénin are actually doing. Of course such a pragmatic strategy is much too "scrappy" to be *globally economically rational*. The complex order of priorities which ensues from individual policies of risk-minimization implies that the developer in particular is faced with a puzzle which may turn into a nightmare: an often blatant sub-optimization of the local economy as a whole and concomitant production strategies of an apparently irrational nature.

The sociologist or anthropologist has been traditionally tempted to regard maritime fishing as one particular type of economic activity among a number of others to which a population may have decided to turn in all freedom of decision at some point of its history. This applies no doubt to these part-time fishermen who are to be found all along the West African coast. But it does not apply to full-time fishermen.

The recurrent disappointments with which developers in the fisheries have been faced are mostly due to the fact that they have been under the impression that West African part-time fishermen (the only ones who – being sedentary –

are readily reachable for a development agency) aspire to become full-time fishermen. In fact, part-timers desire to remain part-timers while full-timers would be quite happy to regain access to land they or their forefathers have lost because of some particular misfortune⁵. Only these populations who deliberately specialized in sea activities linked to the development of ports of international trade can be said to have relinquished their rights to land lightheartedly; most – if not all – of the others have done so in the absence of any viable alternative, having lost a foothold in horticulture which remains under the local circumstances the best guarantee for a successful risk-minimizing economic strategy.

Risk-minimization will therefore take two different forms according to whether or not one has retained access to land. For those lucky enough to hold ancestral rights to a large enough portion of arable land to sustain a profitable “farm,” cash-crops are developed as much as priorities assigned to subsistence-crops will allow. For those who have lost access to the land, the priority given to maritime fishing – which provides one with what is essentially a cash-crop – means that risk-minimization can only be achieved through high mobility either in following seasonally more rewarding types of fish (i.e., those which move in shoals), or in adopting the more drastic strategy of emigrating to less sought-after fishing grounds.

There is no big mystery as to why Anlo-Ewe and Xwla turned in large numbers to full-time maritime fishing: their countries of origin – although somewhat distant (some 80 km between Blekusu and Grand-Popo) – were subjected to exactly the same process of land erosion through sea action, erosion which has narrowed dramatically the portion of land between beach and lagoon, reducing it in places to a single sandy dune.

In the PR Bénin, hardly any arable land remains on the coastal part of Xwla country, the seaside of the lagoon between Grand-Popo and the outfall at “Bouche du Roi” where sizeable villages such as Avloh or Gbèffa are located. Neither road nor path remains on the peninsula. Only light four-wheel drive vehicles find a way through. Ordinary traffic is via boats on the lagoon. The lagoon is rather wide at this spot because it is fed by the Mono river. A census made by the *Direction des Pêches* in August 1984 revealed only fourteen sea canoes in operation on the peninsula. This figure contrasts with the many hundreds of canoes operated by Xwla people originating from the peninsula who have settled in a multitude of beach settlements on beaches or in ports to the East, from Djèg-badji (“Wydah-beach,” PR Bénin) to Pointe Noire (PR Congo), and also in the shanty town of Pla-kondji (“Xwla-village”) on the border of Cotonou’s merchant harbour. In August 1986, for example, out of 139 sea-fishing canoes in the port of Cotonou, 47 had a Xwla crew, 13 an Anlo-Ewe crew, while the remainder belonged to other ethnic groups; respectively “Pédah” (23) (Xwéda, from the region in the PR Bénin around Wydah of slave-trade fame), “Toffin” (22) (from the FOn word for fisherman, local population of Cotonou living either on the firm shores of the Nokoué Lake or in the world-famous lake-dwellings of Ganvié, Zinvié, etc.), Fante (16) (from Elmina, Komenda, etc.), Ga (7) (Greater Accra), 3 from other Ewe groups, etc.

The Anlo peninsula remains much more populated, with the town of Kéta still very lively despite the gradual destruction of its more exposed houses on what is now a receding beach. The shallot growing industry is still flourishing from Abutiakope (southern outskirts of Kéta Town) to Dzita. Salt production from scraping seasonally dried-up parts of the lagoon shores appears to be another active industry practised from November to January (although there is some literature of shallot growing – Nukunya 1975; Hill 1986 – salt production remains unmentioned; see however ten lines in Asamao 1986:18). The practice of lagoon fishing increases during the lean season of the maritime fishery, i.e., from October to May. A fish-breeding technique famous in the fisheries’ literature under the FOn name of *acadja* is here practised under the name *atshiza*: briefly said, fish is lured over a period to a shallow spot of the lagoon where branches have been gathered underwater in heaps; fish find here shelter and food. Every three months or so a net is set round the *atshiza* and the entrapped fish is scooped from within the enclosure by a variety of unsophisticated techniques. Crab-pots are also commonly used in or on the edges of the lagoon, and in the periods when sea and lagoon are joined oysters and prawns soon proliferate.

A census published by the Ghanaian Fisheries Division in May 1986 recorded 466 canoes in operation on the peninsula from Blekusu to Atiteti. Having been held in the Volta region during the anchovy season, the census figure is most probably inflated. It probably registers a number of Ga (especially from Kpone, Ningo and Ada) and Fante crews in their seasonal moves. The tarmacked road which once ran unbroken from Denu to Anyanui has been washed away by the sea in places such as Vodza. Currently (September 1986) a stretch of the coast of about 1 km between Blekusu and Kedzi, where the tarmacked road has been destroyed (“Kedzi Canal”), is only passable for heavy lorries. These ferry loads of passengers along the swampy edge of the lagoon from one surviving end of the broken road to the other.

Prior to the current dramatic developments in the two regions under study, caused by sea erosion, there already existed a tradition of seasonal movement in the fishery. In both cases it consisted of an up-river move (Volta and Mono) where only small gear such as hooks, set-nets and traps would be used – a “transhumant” move of an entirely different nature than what is observed nowadays in maritime seasonal moves and migration, which will be dealt with in the next two sections.

Seasonal Movement in the Maritime Fishery

The reality of seasonal movements among the fishing population is assigned by West African fishermen themselves to a decline in the fishery which has forced them – and more often their fathers or grandfathers – to start following the fish at some point in the past. There are sufficient grounds for remaining skeptical about such particular explanations as it is a universal feature in the world of small-scale fisheries that fishermen would follow in their seasonal movements the large schools of fish which alone can make a crew a profitable economic unit.

Depletion in the fishery – although sometimes real – is also too often mentioned in circumstances where figures show the facts to be otherwise (Delbos & Jorion 1984:248-51) to be regarded as information to be trusted. Fish population dynamics are indeed sufficiently subtle with their pseudo-stochastic variations to account for any subjective feeling that a particular fishery has been in decline from time immemorial (see Jorion 1978).

In the part of the Gulf of Guinea stretching from Sierra Leone to Nigeria, the seasonal moves of fishermen are essentially linked to the seasonal eastward movement of shoals of “herring” (*sardinella aurita*, *sardinella eba*; Anlɔ: *abléwe*; Xwla: *mahun*) spanning from late Spring to October. A map indicates nicely how fishermen move along the coast accordingly, most of them covering a stretch of coast of between 100 and 300 km over the period, which allows every crew a sardinella season of about three months.

Thus, to give a few examples, some fishermen from Ningo (Greater Accra Region) would start the season at Axim (Western Region), would spend some time at Komenda (Central Region), to end up at Ningo again, i.e., an exacting voyage of a little over 300 km. By then some other Ningo fishermen would start their own eastward seasonal move ending at Abutiakope (Kéta Town), in the Anlɔ peninsula (Volta Region), an overall 120 km move. In the PR Bénin, the fishermen of Sétɔr-kɔndji (“Avlékété-beach”) would start at the Togolese capital Lomé on the Ghanaian border, some halting for a while at Anéhɔ at the opposite end of the Togolese coast on the border with Bénin, and ending up at Sétɔr-kɔndji, i.e., a move of slightly over 100 km. Etcetera.

The very set-up of the seasonal movement for individual crews varies a lot and has much to do with the actual size of the towns or villages where they will seasonally settle. Hence provisional arrangements range from renting a room in town at Winneba (Central Region), to building or rehabilitating a straw hut in a seasonal beach-encampment such as “De Gaulle”-kɔndji (“Hio-beach”) in the PR Bénin (“De Gaulle” is the nickname of a Mr. Lawson, owner of an impressively effective 3-canoe Company). Constraints of different types are here essentially geographical or historical in the sense of being linked to the particular history of family-based crews or of “Companies”⁶. As in many historical processes involving complex systems, the particular forms the system takes in later developments depend on the so-called “initial conditions”. In the present instance this would be the early pattern of colonization of the coast. Thus Kedzikope (Volta R.) and Zogbèdji (PR Bénin) are both outposts of Kedzi (Volta R.), while in the PR Bénin, Assion (“Agouin-beach”) and Akpanji (“Adoukɔ-beach”) are both outposts of Avlɔh (Xwla country, near Grand-Popo), etc.

Progressive motorization of crafts operating the sardinella gill-net and purse-seine in the nineteen-sixties and -seventies has led to major modifications in the material organization underpinning seasonal moves. In particular, the setting up of permanent accommodation is rendered much less necessary than before. Thus, for example, in the nineteen-forties, a fisherman of Osu-beach (Accra Town) had, apart from his house at Osu, two other permanent settlement places,



West African Fishermen. Photo Birgit Meyer.

one at Winneba (Central Region, 50 km to the West), and one at Kpone (Greater Accra, 40 km to the East). In each of these three settlements he had a wife and family; each wife would process and sell the fish he would catch when staying locally. When absent his wives would buy fish from other boats to process and sell. Nowadays it is possible for a fisherman of Osu to go and fish on a particular day in the vicinity of Winneba, to land the catch in the port, sell it to local women and be back home at Osu by the end of the day.

A factor distinct from motorization but strongly linked to the general development of the small-scale fisheries and the increasing imbalance between capital investments and revolving funds is the rising dependence of crews in seasonal movement on middle-people, especially on "fish-mammies". The most common arrangement nowadays when a crew is staying at a particular port for a period extending from one week to up to three months (depending on the catch secured), is a special agreement of a financial nature with a local fish-mammy who will provide food and accommodation for the crew in exchange for a monopoly purchase of their catch at a discount price to be negotiated daily on the basis of current selling prices.

Both parties see such agreements as beneficial: fish-mammies are thus assured of a regular supply of fish which will keep the girls employed recruited for the processing and selling of the fish. The discount price obtained from the "lodgers" allows comfortably for the cost of food provided to the crew and their accommodation, the latter being most often quite spartan as a crew of twelve may have to sleep in a single room of West African dimensions. The crew on their part reduce expenses by not having to bring around any of their women to deal with the cooking. They are also assured of having a buyer for their catch without having to spend time and loose tempers in the nerve-racking process of haggling over prices. Most important, they can count on the boarding lady to act as "social security" should the necessity arise. Examples would include advances in cash to pay for medicines needed by a sick or disabled member of the crew, or to pay for repairs to a broken out-board engine, etc. Such advances in cash are reimbursed later (with no interest accruing) by the owner of the boat or of the Company.

To establish such mutual agreements diverse strategies may be adopted. Contacts may be first established between a boat owner and a prospective "official fishmonger" during some social or family occasion such as a funeral, or a funeral's different types of anniversaries. If a boat owner intends to stay at a location in the future, where he has never fished in the past, he will send a scout to obtain some formal agreement with a local fish-mammy which will take force as soon as the crew arrives. It is customary that the scout has got a recommendation in his possession for a local personality (who does not always belong to the fishing milieu). He will proceed in his exploratory contacts therefrom. But a more adventurous crew may simply land at a place of its choice, knowing that local fish-mammies are themselves scouting on the beach where they will vie with each other to offer attractive conditions to newcomers.

But not all crews have moved to these novel types of contracts and some still

adhere to the traditional resettlement in a seasonal encampment of straw huts. This presents the disadvantage of always necessitating some extent of house rebuilding or rehabilitation. Thus in the case mentioned earlier of "De Gaulle"-kondji at "Hio-beach" in the PR Bénin, Mr. "De Gaulle" Lawson resides in this place every year from about October to May along with his Company and attached women and children. An Anlo-Ewe by birth, he spends the rest of the year at Lomé. The Company owns three motorized canoes, two purse-seines, two sardinella gill-nets and one beach-seine. There are 48 full-members (male) in the Company, among whom 38 are proper sailors, the other 10 being old men helping with mending the nets and "heir designated" boys who are being familiarized with the job (an original system of rotation in the crews is here in operation following the Fon market calendar: at each Zogbodo rest-day, i.e., every eighth day, sea-going crews are reshaped).

In November 1984 there were 161 persons at "De Gaulle"-kondji (87 males; 74 females), in May 1986, there were 151 (84 males; 67 females). I remind the reader that the encampment is deserted entirely from June to September. The structure of the population reflects the fact that the settlement is seasonal. In order to show this visually, I have in Figure 1 superimposed the age pyramid of

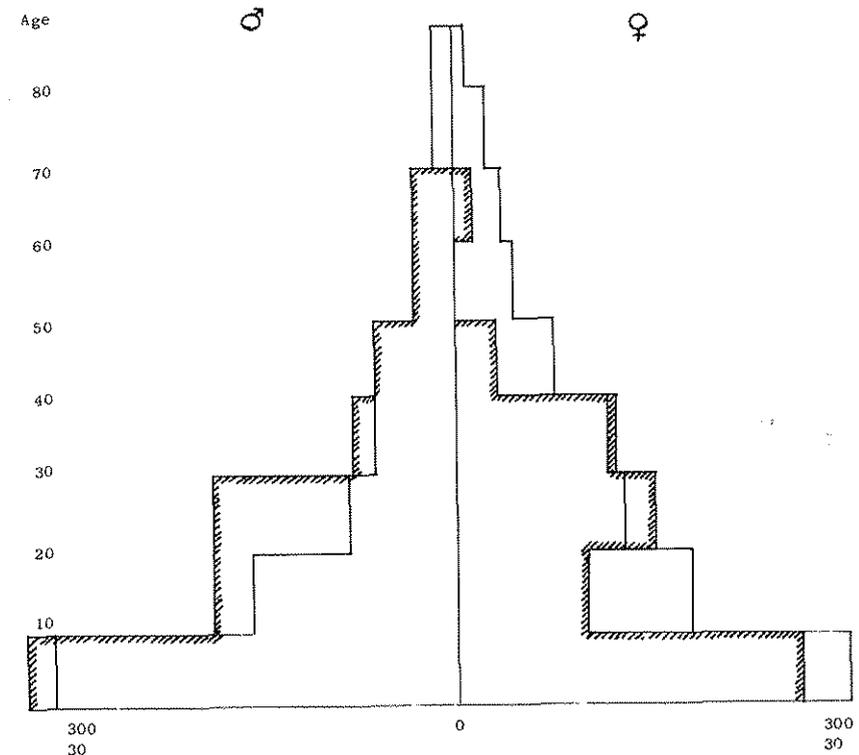


Figure 1. Age pyramids compared: seasonal encampment (hatched), four sedentary villages (plain)

“De Gaulle”-kòndji on another produced syncretically from the data obtained in May 1986 in four sedentary lagoon villages of the same region (Adounko: 211 inhabitants; Hio: 570; Avlékété: 606; Zogbèdji: 304). The differences in structure between such a seasonal encampment and a sedentary population are clearly visible on the diagram: in the former the proportion of old people, especially aged women is much smaller; conversely the male population is inflated, especially in the 20 to 29 year class. The number of young children is very similar as they accompany their mothers in the seasonal move; there is a clear deficit however in girls aged 10 to 19, many of them being involved along with their grandmothers in the fish processing and selling business at Lomé.

In a very interesting paper published in 1969, entitled “Migrant Anlò Fishing Companies and Socio-political Change: A Comparative Study,” Robert W. Wyllie has studied a group of Anlò fishermen who, unlike the “De Gaulle” Lawson Company, move seasonally westwards. These people are from Srogboe in the Anlò peninsula and go each year to the village of Muniano, 3 km from Winneba (Central Region), i.e., a voyage of about 200 km. I would like to reproduce here a few passages from that paper which are of special relevance to my discussion here. Wyllie reports that

Srogboe is one of those villages from which the migrant fishermen and their relatives set out each August. It is the home to which they return each April. Muniano is the kind of settlement to which Anlò migrate and in which they live and work for eight months of the year. It is not ‘home’ even for those who have spent most of their lives there (1969:397).

Contrary to “De Gaulle”’s Company, which practises a variety of fishing techniques, the people from Srogboe resort only to the beach-seine when at Muniano. Wyllie adds that

The economy of Srogboe relies heavily upon the annual return of the migrants for periodic injections of cash, very little of which is dissipated at the company’s base of operations (ibid.).

On the subject of the organization of the seasonal move, he provides interesting details:

After the men are recruited, they are brought from their homes to Muniano at the company’s expense. Normally one or two lorries are hired specially for this purpose, the idea being to get all the men and equipment to the fishing settlement at the same time. When they arrive, they are provided with accommodation by the owner or, if none is available, with assistance in building a house (ibid.:400-01).

As we will see in the following section such “heavy” material provisions involving lorry transport are more common in proper migration than in seasonal moves. Polly Hill reports from her interviews with Anlò fishermen in 1963 that some remembered the women *walking* from Kedzi to Aneho (60 km) in order to accompany their men in their seasonal move (1986:21).

Wyllie says also that

Although some of Muniano’s inhabitants remain in the village throughout the year, and many come season after season to fish or trade, its character as a seasonal settlement is quite pronounced (1969:402).

Muniano is therefore what I have called a *satellite-base* (Jorion 1985:5), to contrast such a settlement with a proper *seasonal encampment* which remains entirely deserted for part of the year. On the subject of population, Wyllie reckons that

Only one-third of Muniano’s population remains behind at the close of the fishing season, while about one-third of Srogboe’s population is away from home during the season (1969:403).

Seasonal moves are somewhat less justified for beach-seining Anlò-Ewe than for those who have turned now to a wider range of techniques, in particular for those who use the purse-seining of the sardinella gill-net and who might therefore benefit from following the “herring” in its yearly migration. Profitability of the beach-seine depends indeed on the turbidity of seawater, a condition which varies very much in the same way along the Ghanaian coast over the year. In August 1986 I met at Nyeaye (2 km east of Elmina, Central Region), Anlò beach-seiners from Woe (Volta Region) who stay at Nyeaye from September to April and while some would return to Woe during the lean season to practise the beach-seine and do some horticulture at the home village, others would try to find seasonal occupations in the vicinity of Nyeaye, essentially as labourers.

I have tried in this section to describe the pattern which emerges from the seasonal movement of small-scale fishermen of the Anlò-Ewe and Xwla ethnic groups. As I suggested at the beginning, the history of each village (or sometimes of every family of each village) is much less “neat” than the picture I may have unwittingly provided. Early contacts or chance meetings may influence global strategies. On the spot decisions may be made according to the assumed daily movement of the fish. Therefore, over a particular season, moves along the coast by the transhumant fisher-folk are more of the nature of a Brownian motion than of a neat and integrated movement. Momentary concentrations of fisherman on the coast, however, do reflect clearly the corresponding movement of the fish-schools.

Migration among Maritime Fishermen

As the reader may have noticed, I have used the word *migration* with the utmost care. There is a good reason for this: observers who have not been as lucky as I have usually describe fishermen (Wyllie is a notable exception) from the static point of view of a resident in a particular place with the accompanying tendency to see any sedentary fisherman as an *autochton* while any *allochton* is liberally

labelled a "migrant." For instance in the PR Bénin, there is a tendency to regard any Ghanaian fisherman as a migrant. Some may indeed be proper migrants, having settled in Bénin, but others should be considered only regular but seasonal visitors.

I believe there is no necessity for any further description of what I have called *seasonal moves*, I now want to contrast this notion with *migration*, defined as the temporary settlement of a family-based crew or of a "company" at one or at a number of places (fishermen may move seasonally from their new home-base) sufficiently distant from the original homebase to prevent any return to it for at least a number of years. A distinctive feature of a migration is that while in seasonal moves the boat normally travels at sea, in the case of a proper migration the canoe is usually transported on board a steamer, the crew and accompanying family travelling to the port of destination either by road (using bush-taxi, minibus or specially hired lorry as mentioned by Wyllie) or often nowadays, by air.

The contrast between *seasonal movement* and *migration* is crucial for the economic anthropologist, as it is only by making this distinction that one may understand varieties in profit sharing among crews and circulation of cash related to the fishery between coastal West African countries. This contrast is also of major importance to understand the developmental cycle of the family: migration and seasonal movement correspond indeed in most cases to two successive moments in a fisherman's life strategy: migration corresponding usually to the early years when a young man (16 up to 30) joins a "Company" to earn large amounts of cash the hard way, while seasonal movement – if less financially rewarding – is more easily compatible with a proper family life.

There is, however, considerable confusion in these matters: government representatives for instance are accustomed to discussing movements in the fishery only in terms of the (assumed) *nationality* of the fishermen involved, i.e., nationals versus aliens. Out of the necessity of acting through governmental bodies, international and non-governmental agencies refer to the fishermen in similar terms. In countries where the great majority of fishermen do not hold a passport, the issue is muddled indeed.

In such a context the nationality of people as mobile as maritime fishermen is assigned through a quite complex mechanism where ethnic group membership and professional affiliation are the more determinant elements (see for more details on this, Jorion 1985:1-3). Tonkin (1984) deals with the same subject with respect to the "Kru" of Liberia whom, as she convincingly shows, are assigned this ethnic label primarily on an ethnic basis as well as on professional grounds, and more often than not for entirely arbitrary reasons. This can lead to absurd situations when a government regards as aliens people who are actually its own nationals and conversely. From this stems the unreliability of figures mentioned in these matters, even when all parties are apparently in agreement. An example which springs to mind is the figure of 45% of aliens in the maritime fishermen population commonly mentioned in the PR Bénin.

The massive presence of Ghanaian fishermen in the sub-region here studied

has contributed to confuse the issue even further. While Ghanaian fishermen operating in Liberia or Sierra Leone are beyond any possible doubt *migrants* – just as are the Beninese fishermen in the Congo or Gabon – most Ghanaian fishing in Togo or in the PR Bénin are only driven to these countries as part of a seasonal move (as in the case of the seasonal encampment at "De Gaulle" - kɔndji discussed above). The narrowness of the Togolese and Beninese coastlines alone accounts for such apparent "migrations." Some cases are however equivocal, as in both the Ivory Coast and in Nigeria a mixed situation is to be found where some Ghanaians are present as part of a seasonal move while some others have properly migrated to these countries.

When fishermen evoke past strategies, seasonal moves are referred to as a quite normal evolution once maritime fishing had become a full-time occupation. However, as I have said earlier, increasing scarcity of fish is always blamed as a prime mover. The beginnings of proper migration however, because of the element of personal drama attached to it, are more particularly remembered: the first member of a family to have migrated is always known and his name is mentioned with emotion and reverence, such an enterprising man being either the father or the grandfather of the fisherman being interviewed. Sometimes even precise dates are remembered, e.g., the first (Fante) fisherman of Komenda (Central Region of Ghana) to have settled at Monrovia (Liberia) is known to have done so in 1914.

Concerning more specifically the Anlo-Ewe, Nukunya reports that

Scores of families of Anlo fishermen started (because of land shortage) to migrate in search of fresh and rich waters. Some settled permanently in Abidjan in the Ivory Coast and Badagri in Nigeria, but others were content to spend periods of up to three years before returning home. Other important locations are Senya Beraku (Central Region), Shorkor (Accra Town) and Grand-Popo in Dahomey. Today colonies of Anlo fishermen can be found on the West African coast from as far north as the Gambia right down to the Congo (1975:61).

When discussing the issue of migration, fishermen are quick to underline how much even provisional settlement in a foreign country depends on a variety of circumstances all linked to international politics, such as for instance the many inconveniences for the fishing populations that arose from the closure of the border between Nigeria and the PR Bénin for the whole duration of the "Naira Operation" (more than one year, 1983-1985) or of the border between Togo and Ghana (for a couple of months, late 1986-early 1987). Sympathy between political regimes does ease things for migrants: this was clear during the late fifties and early sixties when the Ghanaian fishery flourished in Guinée without any hindrance because of the congeniality of N'krumah's and Sékou Touré's political stances. Similarly, the massive presence of Beninese fishermen in the Congo nowadays would pose much more of a problem if the two countries did not see themselves as brother-nations because of a similar Marxist-Leninist creed.

Sympathy or antagonism between governments have less direct implications than the operation or the interruption of a shipping line. Such a facility spec-

tively assists or hinders migration by fishermen to countries far away from their homeland. Fishermen are entirely dependent on such facilities for transportation to distant goals. Thus when in the late seventies sea traffic was interrupted between Takoradi (Western Region of Ghana) and Conakry (Guinée), the Ghanaian fishery in the former French colony came to an end. Ghanaians who wished to go back home were forced to sell their boats and fishing gear locally before their departure. Needless to say decisions about the operation or interruption of a shipping line never take into account the interests of small-scale maritime fishermen.

As a matter of illustration I will report here the case of a fisherman who – although neither Anlo nor Xwla – found himself in this position of being blocked in Conakry. The person in question whom I met at Elmina in August 1986 is a Fante from Half Assini (Western Region, at the border with the Ivory Coast), who has been working as *bosun* (boatswain) for a wealthy Elmina boat owner who is not himself a fisherman. His wanderings lasted for twelve years, beginning in 1965 when the canoe was put on board a steamer at Takoradi sailing to Bathurst (now Banjul) in the Gambia. In the course of these twelve years he stayed successively at Dakar, Conakry (where he remained for an overall period of seven years), Freetown (Sierra Leone), Monrovia, Abidjan, then back to Conakry. He was staying in Conakry when sea traffic between Guinée and Ghana was suspended. Deciding to return to Ghana he sold all his equipment including the boat, making – as he underlines – a nice profit on the operation.⁷ He adds with a fisherman's typical candour that the women who had joined the expedition at its inception – most probably Fante – were brought back along with their children, while all those who had been “acquired” locally during his wanderings were left with their progeny in their country of origin.

The single motive behind migration is quick profit. The people of Komenda still show with some pride the somewhat lavish “Liberia House” which the first local fisherman (to have emigrated to Monrovia) managed to have built in a matter of years back in the nineteen-twenties. Other Komenda townsmen were then quick to follow his example.

Polly Hill quotes in this respect the words of an old Anlo beach-seiner whose father had been a dealer in rubber in Togo before turning to fishing:

On returning from an expedition, his father was more likely to have built a house, or to have bought land or a coconut plantation, than to have invested the proceeds in a new canoe – though he might have bought one later (1986:18).

The reported order of priorities accords with what I have said earlier about risk-minimization: developing one's foothold in agriculture holds a higher priority than developing one's capacities as a fisherman – provided, of course, that one has still got access to land. Most fishermen who live in straw huts on the edge of the beach are indeed staying there on borrowed land, being forbidden to build a house of permanent materials or even to grow a tomato plant, let alone a palm-tree!

Building a house is only conceivable on one's own land, i.e., family land. Let me summarize in a few words the traditional system of land appropriation: the first family to settle at a particular place appropriated for itself a portion of land suitable for its slash-and-burn horticulture. The second family appropriated part of what was left, and so on, until the whole surface of arable land in the vicinity of the village had been divided between a number of “clans.” By the time maritime fishing developed fully, involving both seasonal moves and migration, the coast had been entirely appropriated.

Building a house therefore tells a lot about one's own personal relationship to the land, which has become quite problematic for most full-time maritime fishermen in West Africa. Nevertheless, it can hardly be regarded as an economic investment. Building a “proper” house is more of the nature of “symbolic capital” in Bourdieu's felicitous terms (1972). But as the French sociologist rightly stresses, prestige materialized in the guise of “symbolic capital” has never any difficulty in being converted back into proper “economic capital.”

On the contrary, for those who have lost access to land (and these are numerous nowadays), purchasing a new boat with one's own profits in the fisheries is a quite sensible move. It may only be weighed – as we will soon see – against the no less sensible move of investing one's profits in acquiring a new wife.

We saw that crews involved in seasonal moves were either organized on a family base or as “Companies.” The proportion of Companies is higher however in migration than in seasonal moves. The reason for this should be obvious: in migration the human environment is always foreign, i.e., more or less hostile: men are antagonistic and women diffident. In such circumstances it is reasonable to choose the more profitable option: home-sickness is a powerful incentive for working hard and making as much money as possible in the shortest time.

The Company type of organization is very efficient but very demanding on fishermen as well: only young men can adequately sustain its pressures. The inconveniences of seeing the profits of the venture only shared after a long period of time (three or six years being the norm) are outweighed however by the possibility of receiving a quite considerable advance on one's forthcoming share at the time of enrolment. The somewhat irresponsible life of a Company man is not without appeal either. The owner, or the *bosun* acting as his representative, deals with all practical matters (including everyday justice!). Pocket-money (referred to over the whole region under the Fante word *asibetshi*, “market money”) is also relatively liberally provided in circumstances where very few temptations exist (in 1985, the monthly *asibetshi* for Companies in the PR Bénin amounted to 1,500 CFA for “poor” ones and 3,000 CFA for “rich” ones, i.e., \$3.50 to \$7.00 a month at the then current rate of exchange).

For those fishermen who belong to a Company, returns to the home country are statutory and take place after the agreed one, two, three or six years. The sharing of the accrued profit and the settling of all accounts are carried out at the Company's owner's village or town where the expedition began. The owner has then to decide whether or not to restart a similar venture, and if so, in the same waters or somewhere else. If he chooses to go ahead one more time, there

will be a considerable turnover in the crew in most cases, as many men will have had enough of such a stressful experience. Except for the spendthrifts, Company members will have gathered sufficient cash to take a first wife. They may then try to get a job on a family-owned boat belonging, in the case of the Anlo and Xwla to their patrilineal group (father, father's brothers, father's brothers' sons) or in the case of the Fante (Quinn 1971:115-17) to the matrilineal group (mother's brothers, mother's sisters' sons). Such family-centred crews will most often restrict their fishing operations to seasonal moves from the homebase.

It does happen however that family-crews also migrate. The duration of the stay abroad will not have been decided beforehand and will depend on the amount of profit intended to be made. But as the profitability of family-crews is much lower than that of Companies (down to one tenth in some cases I have analysed over a four months period for "Adounko-beach" in 1984-1985) the stay abroad may turn out to be very long indeed. The reason for this difference is in fact quite easy to understand: if the reader refers back to Figure 1 he will see how much the population pyramid for a Company-centred seasonal encampment gets inflated in the 20 to 29 male year-class compared to that of a sedentary population. Contrasting with this, the population around a family-based crew reflects the availability of crew members from the sedentary villagers. A family-crew has no choice but to employ all able men: this single factor is sufficient to explain the lower productivity of family-crews.

Fante Company men encountered at Robertsport (Cape Mount County, Liberia, close to the Sierra Leone border) reckoned they visited their home country every two to three years (thus accounting for a "break" in the case of a six year contract). Fante family crews met at Gbantor (Virginia, near Monrovia) similarly mentioned two to three years between visits to Komenda, their port of origin, as did some wealthy Anlo beach-seiners of "Popoh-beach" (Monrovia). Other Anlo interviewed at Robertsport mentioned periods of seven to ten years. Sometimes they added the sad acknowledgement that there might not be any return at all. This was more especially the case for small groups of Anlo (down to five or six men) operating a beach-seine with the help of hired local manpower. In cases such as these, migration has in fact turned into proper emigration. It is a conclusion difficult to escape, but one which is not easy to be admitted by those involved.

The time spent home whenever one returns varies much from crew to crew. Figures mentioned ranged from two to nine months. Short stays correspond to simple parental visits, longer stays are usually associated with resuming work in the homeland. Here are two examples.

Mr. Dossou Atti of Gbeffa, a coastal village of Xwla county, arrived at Pointe-Noire (Congo) in 1969. He has two canoes and a crew of ten Xwla people. He has two wives with him, the first one he married before migrating, the second he met in the Congo. His six younger children born to his local Vili wife are here with him at Pointe-Noire. The four children born to his Xwla wife are staying back home at Gbeffa with their grandmother. The eldest, a girl of nineteen is undergoing secondary education at Grand-Popo. From 1969, when he arrived,

to August 1985, when I met him, he had returned to his village four times, i.e., every three to four years, on each occasion for four months, from August to December.

Mr. Yahovi Anani arrived in Pointe-Noire from Gbékon (the first coastal village east of Grand-Popo) in 1978. He has one boat with a Xwla crew. His first wife remained in Gbékon with their three children; his second wife is Congolese and has borne him two children. Between 1978 and August 1985 he went back three times to the PR Bénin (i.e., about every two years) for respectively six, eight and nine months. Each time he resumed fishing locally for the duration of his stay. In the meantime his crew in the Congo would keep on fishing in his absence.

On the whole, and apart from the interruption of sea connections I mentioned earlier, working abroad does not seem to constitute *per se* a considerable problem for transhumant fishermen. As one of them put it: "As long as you're no troublemaker, you're O.K. anywhere!" Ghanaians and Beninese are quick to add, however, that they are looked upon with suspicion in countries with a more right-wing regime, especially at times of revolutionary turmoil in their countries of origin.

Most governments are trying to make a profit out of the presence of foreign small-scale fishermen in their waters. For example, 300,000 CFA in excise duties must be paid for a canoe unloaded from a steamer in the Congo, plus 25,000 CFA for a place to build a "house" in the shanty towns of "Tantine Yvonne" or "Nouveau Quartier" (1985). Furthermore, \$40 must be paid yearly (1986) by foreign crews (which many manage to escape paying through astute seasonal moves) as well as a berth fee of 20,000 CFA for each boat lying at Lomé harbour (1986).

Excise duties on new fishing gear crossing a border is regarded by fishermen as a greater problem. Sums demanded may be somewhat arbitrarily defined by customs officers at the border (who may be very greedy indeed). Thus on an out-board engine crossing the border from Togo to the PR Bénin, up to 60,000 CFA may have to be paid on a motor worth 500,000 CFA. Passports are regarded as a non-issue as most fishermen do not have one and a small fee (e.g., 500 CFA, 150 Cedi) will satisfy a customs officer. A single passport for a full Company is apparently regarded as sufficient in most West African countries. There is therefore little difficulty involved in operating abroad. The only serious disadvantage is that an alien cannot expect to rely on any state-organized help of any sort, unless he can successfully pretend to be a national. Thus Xwla and "Mina" (Anè-Fante) fishermen of Bénin benefit from the Togolese medical system if they care to cross the border.

Neither is settlement in another country regarded in itself as a serious matter. Founding an entirely new beach settlement however is a more complicated operation as it involves lengthy formal and informal negotiations with a variety of local authorities. The legal owner may be distinct from the "moral" owner, i.e., a deity on whose behalf the *vaoudoun* (Fon, Xwla) or *trou* (Anlo) priest will be acting. Matters are usually settled with the gift of a couple of bottles of spirits (gin, palm brandy). There may be formal agreements on a yearly fee to be paid,

but these seem to be soon forgotten. Courtesy gestures such as donations for funerals or village festivals are however expected from new settlers.⁸

Matters are more straightforward when settling in a town, as in most cases some members of the community of origin will already be present locally and would introduce a newcomer to the authorities. Thus, for instance, in every port abroad where Ghanaians stay, one of them acts as the official representative of the Ghanaian community in all dealings with the local population.

A Comparative Study of Two Beach Settlements

I will end this essay with a comparative study of two beach settlements in the PR Bénin which are interesting to compare as they have made opposite choices as far as fishing policies are concerned. The great majority of fishermen at "Zogbèdji-beach" have opted for seasonal moves (only two men, i.e., 5.7% of the male population aged 20 to 55) have chosen migration to Gabon. By contrast, in Akpanji, no fisherman has opted for seasonal movement, but ten men are currently fishing in Gabon and in the Congo (i.e., 52.6% of the male population aged 20 to 55 (see map)).

"Zogbèdji-beach" is a twin beach-encampment located in the PR Bénin in what is in fact a coastal enclave in Togolese territory. It was founded in the late twenties by Mr. Kossi Mana Ahougnon from Kedzi (Anlɔ peninsula), and he was joined over the years by other families from Kedzi, the Gnamadi family from Dzelukope (Anlɔ peninsula, south of Keta), the Folly family from Aflao (Volta region also, but on the coastal border with Togo), and more recently by some people from Tegbi (Anlɔ peninsula). In May 1986 there were 219 people on the beach (October 1984: 221), 100 males (1984: 101) and 119 females (1984: 120), all of whom regard themselves as Anlɔ-Ewe (although the Folly family is clearly of Fante origin). Zogbèdji proper is a lagoon village about 1 km further inland, on the opposite side of the coastal inter-state road, with a population in 1985 of 304 "Mina" (Ané-Fante) horticulturalists. There are five crews at the beach. One crew (21 full members, 10 aids) using the purse-seine⁹ and belonging to a most remarkable personality, Mr. Tchabassi Amadossi, a voodoo priest (*vodunɔn*) of "international" reputation; one centred around the Ahougnon family (17 full members, 3 aids), which uses both the purse-seine and sardinella gill-net; one centred on the Gnamadi family (9 crew members) and using the set gill-net only (*tɔnga* and *sɔvi*). Another two crews using the sardinella gill-net and set gill-net respectively are made up on odd occasions of members of the first two crews mentioned above.

Akpanji is part of "Adounko-beach" at about 10 km west of Cotonou on the poorly maintained dirt-track known as "Route des Pêches". The encampment was founded in 1946 by Xwla people from Avloh (M. Raïs, pers. comm.). In May 1986, there were 118 people at Akpanji (1984: 122), 54 males (1984: 56) and 64 females (1984: 66). The other part of "Adounko-beach" is "Kpanou," a seasonal encampment centred around a very effective Anlɔ-Ewe Company headed by Mr. Kpanou Gozo (59 persons in January 1985). Adounko "Huègbɔ"

(primal) is a lagoon village quite distant from its beach. Its population of 211 (March 1985) is composed of Fɔn horticulturalists and lagoon fishermen.

There are six crews at Akpanji including one "Cooperative," a state-introduced system of poor profitability.¹⁰ The latter supposedly practises the purse-seine and has a statutory crew of 15, all Fɔn men from the lagoon village. This crew is undertrained as far as sea fishing is concerned, which explains some of its difficulties. The other five have small crews of four to seven men using the set gill-net from small unmotorized crafts. Two of these crews get together during the "herring" season to operate a sardinella gill-net. Both Zogbèdji and Akpanji are thus outposts of their villages of origin, but they are clearly not seasonal encampments as a considerable part of their population stays there permanently. Both "satellites" were founded for the same reason, the relatively overcrowding of the village of origin due to the pernicious action of the sea I mentioned earlier on. But the strategy adopted by the beach-settlers of these two villages is – as I have hinted – entirely different: fishermen of Zogbèdji have adopted a pattern of well-organized seasonal moves between their home-base and the outpost, with long stays at Lomé and Aného in Togo, while the fishermen of Akpanji have opted for long-time migration to Gabon and the Congo.

Although the anthropologist will always emphasize socio-historical factors in explaining such a divergence in strategies, it would be unforgivable for him to ignore other types of factors which may play a role, in particular ecological factors. Fish schools feed on zoo- and phyto-plankton which develop essentially in "upwelling zones," where layers of cold water which ordinarily remain on the sea bottom rise to the surface. This happens in the vicinity of the coast in places where the currents allow the phenomenon to develop. The usual eastward limit of the upwelling in the region under scrutiny is off Lomé, with occasional moves as far eastward as the waters off Cotonou or even Badagri in Western Nigeria (Pliya 1980:37-38). The stretch of coast between, say, Kedzi and Zogbèdji is therefore – although not ideal – quite favourably located in terms of fishing grounds. Akpanji on the contrary is dangerously close to the maximum eastwards extent of the upwelling. Even if the people of Zogbèdji and Akpanji have no clear concept of the mechanism at work, they have noticed its empirical consequences.

There is only a short distance (about 75 km) between Kedzi in the Anlɔ peninsula and Zogbèdji in the PR Bénin. In spite of two borders to cross and a bad sandy stretch ("Kedzi Canal") which as I have already said requires a heavy lorry to pass, it is still possible to do the trip by bush-taxi in four to five hours for the modest equivalent of 750 CFA. Thus going back and forth between Kedzi and Zogbèdji is easily done. On August 30th 1986, for instance, one Zogbèdji fisherman made what was his sixth trip to Kedzi for that year. He would stay in his ancestral village for periods of up to two weeks. Moving from one place to the other by sea is not any more difficult, especially since Aného and Lomé can be used as stepping-stones. This explains why Zogbèdji fishermen can so easily be pragmatic about following the fish. In the meantime only canoes beyond repair would be lying on the Zogbèdji beach, giving the village a desolate appearance during the slack season.

By contrast, the people of Akpanji have severed links at the professional level with their village of origin, Avloh. Although it is still customary for a man of Akpanji to find a wife in Avloh, stays there are only motivated by family occasions such as funerals and funeral anniversaries, or village festivals. But Akpanji crews do not go to Avloh to fish anymore.

I have already mentioned in the preceding section the case of some Xwla people in the Congo. They return home every two to four years, dividing their life between wives and children in Bénin and in the Congo. Families who have remained in the home country are sent money entrusted to visitors passing backward and forward or by postal orders, the amounts transferred being sometimes substantial. I unwittingly shamed a Xwla fisherman when in the course of a public interview he felt obliged to admit he was only sending his wife 10,000 CFA monthly, a sum he knew his colleagues (listening to the conversation) would regard as quite small.

Along with other Xwla present in the Congo and Gabon, Akpanji fishermen regard the move as a very profitable one. Indeed in these two countries Ghanaian and Béninois fishermen hold a quasi-monopoly over the local fishery of pelagic species, and Central African waters are particularly well-stocked. It is possible for a sufficiently skilled young man to join a Company in Gabon or the Congo, but the Company type of organization is far from being as popular among the Xwla as it is among the Anlo and the Fante. A man of Akpanji would therefore usually wait until he has raised the necessary capital to equip a boat before joining his co-villagers abroad. The investment is, however, considerable. In August 1985 it was reckoned that a boat would cost 600,000 CFA (covering purchase of the hull, work supervision fees, towing to the beach by tractor and sea transport from Ghana to the PR Bénin), 450,000 CFA for a 25 HP outboard engine, 900,000 CFA for a sardinella gill-net (the purse-seine is not used in the Congo simply because fishing at night is incompatible with the timing of local markets), 200,000 CFA for transport of the canoe from Cotonou to Pointe-Noire on board of a steamer, and finally 300,000 CFA in excise duties - i.e., a global investment of 2,450,000 CFA or \$7,000 at the August 1986 rate of exchange.

It is obvious therefore that seasonal moves and migration imply different investment policies. This topic however deserves proper treatment and cannot be dealt with adequately here: it will be developed in a separate paper. I will content myself here with mentioning a single revealing fact. In 1985 and 1986, both villages were involved in similar development projects which in each settlement allowed a crew to make substantial profits. Now the way this additional profit was used by the beneficiaries was entirely different in Zogbèdji and in Akpanji.

In Zogbèdji, the young men in the crew found here an opportunity for acquiring a first wife at a much earlier age than usual. Although among the Anlo-Ewe there is no bride-wealth in the strict meaning of the term but rather a series of marriage gifts given by the bridegroom to the bride and to the bride's mother, complemented by the providing of drinks (see Nukunya 1969:92-96). A young man obtains the necessary cash for these prestations from the elders of his paternal extended family. Thus the family head is in a position to decide about the

convenience of a particular union. Having obtained cash independently through the subsidized experiment, the young Zogbèdji fishermen had managed to bypass their elders' authority. The latter reacted by making it clear to everyone that the experiment was from then on unacceptable to them.

In Akpanji a crew was constituted for the experiment, mixing lagoon village Fon and Xwla beach settlers. The former were rightly regarded as amateurish by the latter since the Fon crew members continued to give horticulture priority whenever there was a conflict between sea fishing and jobs to be done in the garden. Consequently, the Xwla component in the crew tried to evict the Fon crew members and have them replaced by young Anlo-Ewe who would be as highly motivated in the maritime fishery as themselves. Asked about the developing dissension in the crew, the leader declared confidently that his purpose was to migrate to the Congo for several years. His reasons were that fishing in the Congo was much easier than that involved in the experiment and that he would anyway earn twice as much there. Every fisherman in the village would do the same, he added, if only he could afford to pay for the expensive sea-fare

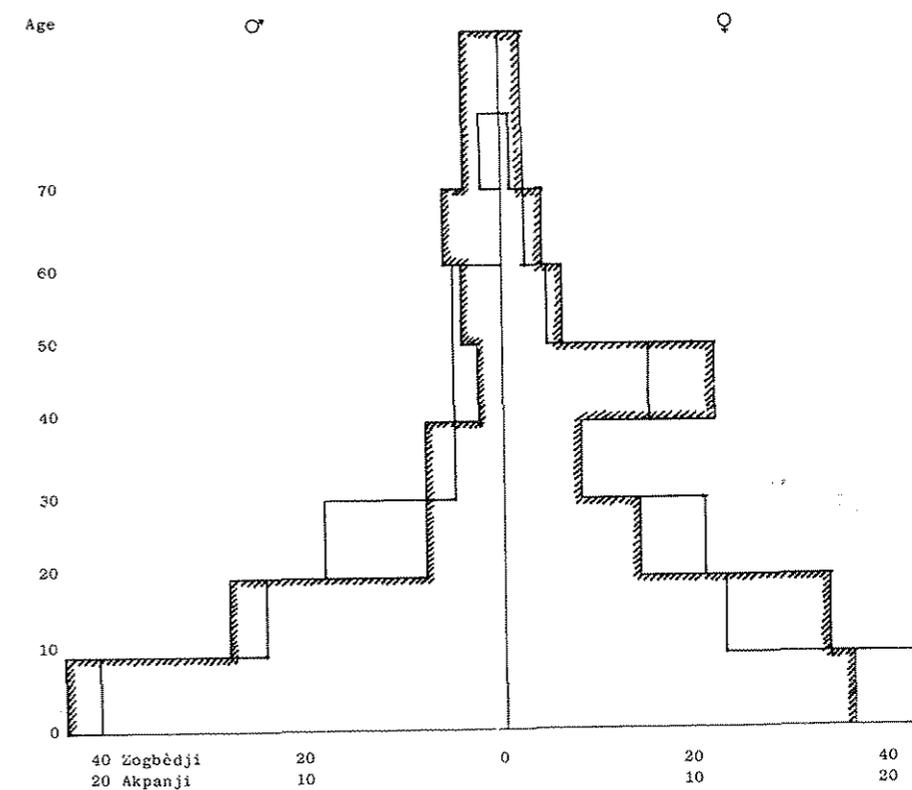


Figure 2. Comparison of two beach settlements. One (Zogbèdji) turned to seasonal moves (plain), one (Akpanji) turned to migration (hatched)

and taxes (M. Raïs, pers. comm.). This young man was thus quite open about what were the tactics of the Akpanji men taking part in the experiment: to raise the capital necessary for migration to the Congo.

The contrasting features of Zogbèdji and Akpanji are in fact reflected in their population structure. In support of this I present Figure 2 where the age pyramids for the two beach-settlements (May 1986) have been superimposed.

In Table 1 the male population has been divided in age-classes. For comparative purposes I have added figures for another fishing village, Ayiguénou (population 692 in November 1984) which contrary to Zogbèdji and Akpanji is no outpost of another village but is, so to speak, its own "stem-base."

The fact that Akpanji has severed links with its village of origin and Zogbèdji has not is clearly visible in Figure 2. In Zogbèdji indeed there is hardly anyone over the age of sixty. This part of the population has returned to the village of origin. We already noticed a related fact when the population of the beach-settlement at "De Gaulle"-kòndji was examined, i.e., that a large number of girls aged twenty to thirty would stay with their grandmothers to help with fish processing and selling. Figure 2 shows hence a clear deficit in this age-class at Zogbèdji compared with Akpanji. Also, the impact of migration as opposed to seasonal moves is clearly visible in the twenty to thirty age-class for both men and women, the absentees being, as we now know, for the most part in Gabon or in the Congo.

Conclusions

When one examines the history of a community of maritime fishermen the world round, there is always a moment to be found when the men turned from part-time fishing to full-time fishing. This moment is always of a dramatic nature, coinciding with an economic, climatic or demographic event. In other words, becoming a full-time fisherman (when one has been a part-time one) is never a voluntary choice. It is something one has been forced into doing by adverse circumstances. One may even go so far as to consider it as a (universal) sociological law that *no one ever becomes a full-time maritime fisherman other than under duress*; necessity and necessity alone can force any one to exercise such a

Table 1. Percentage of male village population in each age-class.

Age-class	Zogbèdji	Akpanji	Ayiguénou
0- 9	40	39	33
10-19	22	20	23
20-29	22	11	18
30-39	5	11	7
40-49	5	4	6
50 +	7	16	13

tough, dangerous and economically risky activity. It is not the continuous dangerous nature of the occupation which makes full-time fishing so unattractive, it is too risky in economic terms. It is risky because it amounts to putting all one's eggs in the same basket: in economic and cultural environments such as those current in coastal West Africa, diversification remains the best guarantee at household level that day in day out subsistence will be assured.

I have been dealing here with two ethnic groups, the Xwla and Anlo-Ewe, who have turned to full-time maritime fishing for similar reasons: scarcity of land. Once access to land has been severed diversification of occupations becomes impossible and risk-minimization strategies need to take an altogether different direction: mobility in following the fish wherever they go. There are two distinct qualitative ways of doing this. Follow the fish over a stretch of coast centred on one's beach settlement, an outpost of the ancestral village, which I have called *seasonal moves*, or, via what I have called *migration*, turning to the more drastic solution of exiling oneself for a time under more favourable skies, where fish are plenty and buyers rich.

Acknowledgements

Too many persons in too many countries have helped me in my research for them to be thanked here nominally. I would like however to single out, as a representative of them all, Mr. Garba Guidiglio. With respect to the present paper I believe he can be regarded as a symbol as he himself is of Sétor-kòndji, "Avlékété-beach" (PR Bénin), his father Komi Diffide and grandfather Doglo were of Aného (Togo), while his great-grandfather was from Kedzi (Ghana). Ms Marina Raïs, Mr. Cyriaque Atti Mama and Mr. Ned Coakley have provided me with invaluable information from their own research, I am pleased to thank here three informants who are also personal friends.

Notes

1. The field material used as data for the present paper has been collected by me in my capacity of either Expert or Consultant for the F.A.O. The views expressed here do not constitute however the official or unofficial position of the F.A.O. in these matters.

2. The so-called "Ghanaian canoe" comes in various sizes: Poli: about 18 metres; Watsha or Ali (respectively names for the purse-seine in Ewe and Fante): about 15 m; Anifa: about 12 m; Kpanya: from 8 to 10 m; Tonga (entangling drift- or set-net): 5 to 6 m (Coakley, pers. comm.).

3. This applies to a lesser degree to some very sheltered parts of the coast of West Africa where, in the absence of any threatening surf, rivertine-type circumstances prevail quite far out at sea. I have in mind, for instance, the Sierra Leone coast around the "Colony".

4. In June 1986, Coakley numbered sixty to one hundred "companies" of dug-out canoe carvers in Pram-Pram (Greater Accra) alone (pers. comm.).

5. In *La transmission des savoirs* (Delbos & Jorion 1984) we were able to show that the same policy of retaining or regaining a foothold in agriculture is quite common even in very discrepant circumstances. The example treated in the book (pp. 61-73) is that of the traditional salt-producers of the Mès (Loire-Atlantique, France). Salt-producers are share-croppers at the bottom of the social ladder; their only ambition is to transform the money they will (occasionally) make from the salt into arable land. A particular family life-cycle is followed over the period 1945-1980, Figure 6 in the book (p. 71) shows graphically the successful strategy of developing the "croft" (3 ha) into a farm (24.5 ha) over the period.

6. The Company is a contractual type of fishing venture of a pre-defined duration: one to six years. Men enrol by signing a contract with the Company's owner. The owner is most often not a fisherman himself, his representative on the boat is the Bosun or skipper. Financial matters are dealt with by the Treasurer while the Secretary acts as a representative of the crew proper. There is no sharing of the profits while the fishing is on, but crew members are entitled to statutory distributions of food and to pocket-money called in Fante *asibetsi*. If they so wish crew members can also mortgage some of their forthcoming share in the profits (most do so at enrolment). Reports on the financial success of the fishing are regularly given, but actual sharing of the profits is only done at the end of the one to six year period during which the Company is operating. Companies are much more effective in economic terms than family-centred crews (for more details see Jorion 1985:35-37).

7. Price differences for the same items may be considerable between countries. Thus, in 1985, a similar sardinella net panel is worth 20,000 CFA at Cotonou and 65,000 CFA at Pointe-Noire. Although the tree used for dug-out canoes (*Triplochiton scleroxylon*) can be found in the Congo, it is still cheaper (including excise duties) to have a boat carved in Ghana and brought by steamer. I met a Congolese (Vili) fisherman pretty pleased to have purchased a battered and punctured hull for a price I knew to be that of a new one at Pram-Pram (Greater Accra).

8. A complex symbiosis exists between beach settlements and lagoon villages at the economic, alliance and ritual levels. It is based on individual and communal gentleman's agreements. This important issue will be dealt with separately.

9. Beach-seines are operated by their crews from the beach, but the net is set from an unmotorized canoe, generally a medium-sized Kpanya (see footnote 2). Set gill-nets do not either require a motor, they are used from the smaller Tonga (name of the largest set gill-net) crafts. The purse-seine and sardinella gill-net require the larger Watsha (Anlo name for the purse-seine) canoe equipped with an outboard engine (25 HP or 40 HP). Because of high fuel costs, the latter two nets are only operated by well-skilled crews.

10. "Cooperatives" were introduced in the PR Bénin to help fishermen to have their boats motorized allowing them to turn to the more effective nets (purse-net and sardinella gill-net). As the credit terms offered were not competitive full-time fishermen snubbed the scheme. Part-time fishermen alone applied, but they had neither the expertise nor the motivation needed and the experiment failed (see for more details Jorion 1985:21-24).

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Regulation of Commercial Salmon Fishing in Southern New Brunswick

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

Introduction

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

Regulation of fisheries may be seen in two aspects. On the one hand are fishermen's "rights to fish," established through historical practice. In some sense the fishermen's rights are over a particular territory, often the shoreline near their community. These territorial use rights in fisheries, or TURFs, are the logical opposite of open access common property (Christy 1982:2-3), since fishermen have identified a *site* at which they fish. Christy suggests the significant aspect of the TURF is its *value*, a value which can be increased through agree-

ment among owners of similar TURFs. Territorial use rights in water are more difficult to define than property on land, foremost because the stock is mobile, i.e., it may be intercepted elsewhere, and it is difficult to detect. A TURF is analogous to a property right, which may be defined as "a constellation of highly complex adjustments of entitlements and expectations" (Carmichael, cited in Christy 1982:3). Rights to transfer, to extract benefits, to exclude others, to remain free of nuisances or pollutants, and to lease may also be included in marine environmental property. As Pinkerton (1987) suggests, this right "bundle" is ambiguous in the extreme for fisheries because of claims made by the state over total ownership and counter-claims from other users harvesting the resource. For salmon originating in New Brunswick rivers, TURFs are organized in three large marine areas: off West Greenland, around Newfoundland, and in New Brunswick's rivers and near shore. Jurisdiction must be understood in light of these various claims to the salmon.

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

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

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

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

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

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

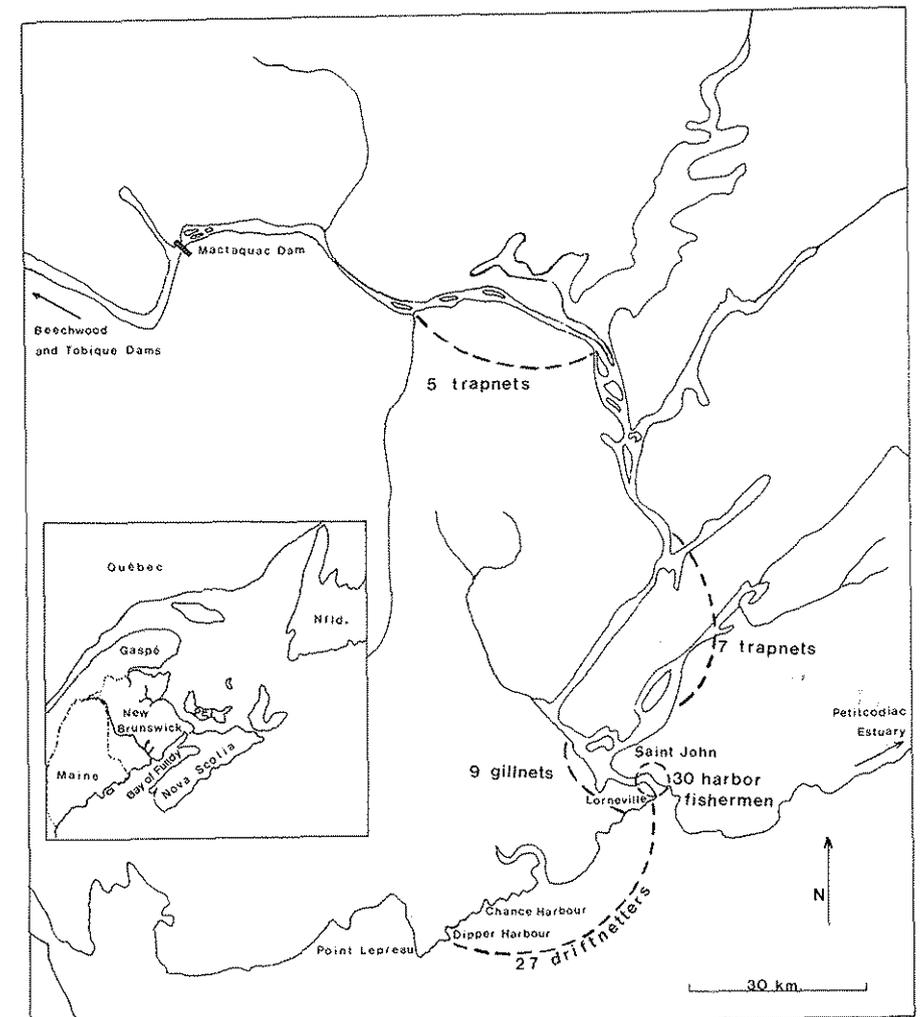
Since 1981 when the nine year ban on commercial salmon fishing in New Brunswick was partially lifted, we have examined the commercial fishermen's interests and their increasingly vocal opposition to management policies. Our interest was stimulated by the media reports which suggested that the sports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

The Fishing Communities of Chance Harbour and Dipper Harbour

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

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

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



Saint John River System

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

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

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

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

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

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

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

Fishing in Chance Harbour and Dipper Harbour in the 1980s

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

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

Table 1. Licences Held by Chance and Dipper Fishermen

Chance Harbour Licences						
Fisher- man	lobster	herring	ground- fish	salmon	scallop	other
1	x	x		x		
2	x		x		x	
3	x	x		x	x	
4	x		x			
5	x		x			x
6	x	x	x	x	x	
7	x	x	x	x		
8	x	x	x			
9	x	x				
10	x	x		x	x	
11	x	x	x			
12	x	x		x		
13	x		x		x	
14	x	x				
15	x		x			
16	x		x			
17	x					
18	x					
19	x					
Total	27	13	13	10	6	2

Dipper Harbour Licences						
Fisher- man	lobster	herring	ground- fish	salmon	scallop	other
1	x	x	x	x	x	
2	x		x	x		
3	x	x	x	x		x
4	x					
5	x					
6	x					
7	x			x		
8	x	x				

just over half of Chance Harbour households were supported by fishing. Dipper Harbour has only three fishing households, being the principal residence of Lepreau workers.³ The harbour itself is used by fishermen from Chance Har-

Table 2. Chance Harbour Household Incomes by Source

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

bour as well as fishermen from the western side of Lepreau, providing a regional more than a community focus.

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

Profile of Opportunities

Costs

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

Species	January-March	April-June	July-September	October-December
Salmon	at sea	large spring run ***** -----	small fall run *****	return to sea
Cod	*****	move offshore	-----	
Flounders including halibut	offshore	*****	-----	
Herring		small run	large fall run	
		*****	*****	
Scallops	*****	-----		
Lobster	*****		moulting	*****
	-----			-----

Key: ***** Species available in the local area.
 _____ Regulated time for species capture.

- Notes: 1) Cod and flounders are managed by licencing fishermen for otter trawling and long-lining. Handlining for halibut is done almost as a sport in Fundy Harbour.
 2) The diurnal movements of herring are significant, being close to shore at night and scattered in the daytime offshore.
 3) Herring are managed by licencing fishermen and restricting the effort.
 4) Variation orders changing the season may be instituted on any species.

Figure 1. Availability of Species and Regulated Seasons

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

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

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

Limited Licensing in the Salmon Fishery

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

fishermen for a change in bureaucratic regulation.

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

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

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

Salmon Fishing Prior to the Ban

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

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

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

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

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

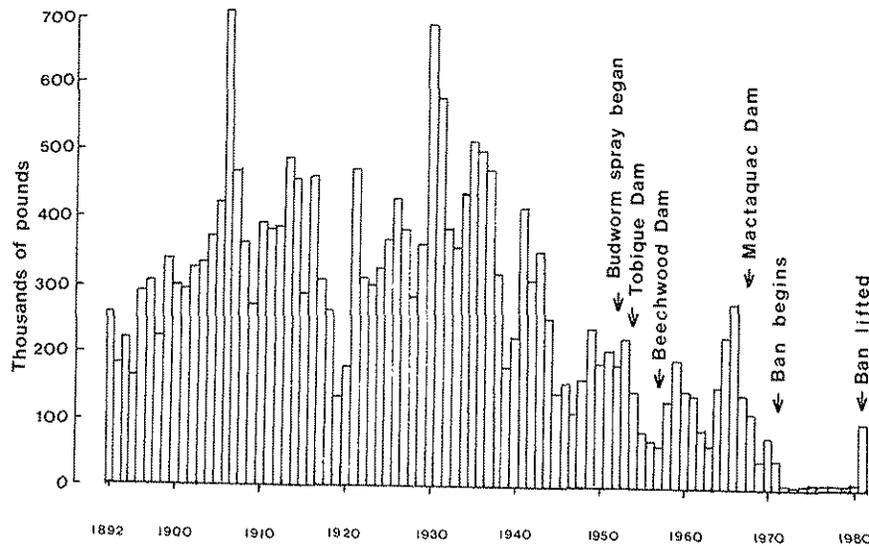


Figure 2. Commercial Salmon Landings on the Saint John River, 1892-1980

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

The Ultimate Quota Limitation: The Ban

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

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

Effects of the Ban

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

Monetary losses were substantial. Nets which had been left for nine years had to be replaced or repaired due to rot and damage by pests. Many fishermen had to tie cork and lead lines to new nets at a cost of more than \$1,000 per hundred fathoms. (Nets normally are 500-600 fathoms long.) Secondly, compensation remained the same over nine years despite a tripling in the wholesale price of salmon and a doubling in the cost of living (Canada, Fisheries and Marine Service 1972:34, 36; *Bank of Canada Review* 1982:\$132). Considering inflation alone, salmon fishermen effectively lost thousands of dollars.

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

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

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

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

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

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

Limiting Effort by Reducing the Season

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

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

Responses to Regulation

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

Thus older men's statements condoning illegal activities reflect radically

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

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

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

Although government regulations have been a divisive force with disruptive consequences, they have also spawned unifying associations within the fishing communities. At the time of the ban, most commercial salmon fishermen be-

came members of the Saint John Commercial Fishermen's Association, which focussed on the salmon fishery. This association was very active in representing the Saint John harbour fishermen, many of whom worked part-time at a variety of jobs in the city. Because these fishermen had different interests from those of the Chance and Dipper fishermen, the latter aligned themselves with the other Bay of Fundy fishermen in 1984 to form the Fundy North Fishermen's Association. The focus of this group was the lobster fishery and in it the salmon fishermen were a small minority. Therefore, in 1985, the Fundy Salmon Driftnetter's Association was formed with 22 members, i.e., all but the two Fundy salmon fishermen who were near retirement.

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

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

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

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

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

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

Discussion

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

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

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

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

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

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

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

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

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

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

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

Acknowledgements

This research was supported by two grants from the University of New Brunswick. We thank that institution and particularly the residents of Chance and Dipper Harbours who made the study possible and enjoyable with their unfailing assistance and many kindnesses. Several people reviewed this manuscript and we owe particular thanks to David Thompson, Dough Belding, Alan Abbott, Ethel and Greg Thompson, all of Chance and Dipper Harbours, Mike Dadswell, Evelyn Pinkerton, John and Connie DeRoche, Alistair Cruickshank, Raoul Andersen and Larry Felt for their assistance and encouragement.

Notes

1. Unfortunately for our purposes, Levelton did not include salmon in his discussions of the particular species (1981:8-15) and the Bay of Fundy was not considered separately from the entire Scotian shelf region.
2. There is still extensive coverage from anglers and commercial fishermen. For coverage at the time of the ban see for example, the Saint John *Telegraph-Journal*, 22 March 1972; 25 April 1972; 26 April 1972; 28 April 1972; for more recent articles showing the different points of view see the Fredericton *Daily Gleaner*, 18 August 1983; 19 August 1983; 13 February 1987.
3. No household survey was taken of this community for this reason.
4. These estimates are based on cost figures from the early 1980s.
5. In the 1920s and 1930s commercial catches in Atlantic Canada varied between 2,000 and 5,000 tonnes but averaged 4,000 tonnes. During the 1950s and 1960s severe declines were experienced, with catches varying from a low of 1,200 in 1955 to nearly 3,000 tonnes in 1967 (Harvesting 1978:28).
6. Of the 27 fishermen in our study only two were said to keep undersized lobsters, which was considered improper as well as illegal.
7. Beverly Cook and Richard McGaw (n.d.) of the Department of Economics, University of New Brunswick completed a study showing a net profit of \$46,000 on \$1.2 million worth of commercial sales in 1983. The recreational fishery had a net value of \$3.5 million.

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

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

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

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The Baymen of the Great South Bay, New York

A Preliminary Ecological Profile

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ABSTRACT Ecology is the study of the interactions among organisms and their environment. Various theories and concepts taken from ecology, for example, optimal foraging theory, have been used in the anthropological study of fishermen. While this approach can provide useful insights, it removes the fishermen from their environment so that potentially significant factors may be taken out of context or omitted. An ecological profile of a fishermen population would present a more comprehensive ecological study, examining the ecological processes of predation, competition and adaptation from the perspective of the fishermen. All pertinent factors would therefore be taken into account.

An ecological profile of the fishermen, known locally as baymen or clam diggers, who harvest the hard clam (*Mercuria mercenaria*) from the Great South Bay, New York is presented. The baymen are examined from the perspective of a predator on hard clams requiring a certain amount of harvest to survive and as competitors with each other and with other predators for hard clams as well as with those seeking to control access to bay bottom for shellfish culture, among others. The adaptive responses of baymen to environmental stress, particularly an inadequate harvest, are described.

Introduction

Fishermen have been the subject of numerous ecologically oriented anthropological studies (see Harris 1986). Most of these studies use ecological models or concepts such as optimal foraging theory (McCay 1981) to describe or analyze the actions of fishermen. While this approach can provide a useful framework for testable hypotheses, it is limited in both scope and perspective. This can pose a serious interpretational problem as fishermen must deal with a variety of needs and stresses that must be resolved simultaneously. There is also the risk that the chosen ecological model may be inappropriate.

Few, if any, studies place fishermen in the context of an ecological community and consider the various interactions that occur from the fishermen's perspective. A fishermen population (i.e., fishermen in a geographically discrete area harvesting the same organism) is no different than that of any other species. Both have biological requirements and must confront the same suite of basic survival problems: securing sufficient energy (i.e., food, cash) for maintenance, growth, and reproduction, obtaining resources also being sought by others, and responding (adapting) to changing conditions. Fishermen in addition must meet various cultural constraints. If a population of fishermen is successful in meeting these challenges, like any other species, abundance will be stable or increase while if unsuccessful, abundance will decline and there is the risk that fishing as a way

of life may have to be abandoned (extinction for other species).

An ecological profile defines the fishermen's unique lifestyle and cultural requirements and then considers them as predators on fish or shellfish, as competitors with each other and other species, and subjected to environmental variability. It shows therefore how the fishermen function within their environment and how they respond to it. The advantage to the ecological profile is that it highlights the various interactions and constraints, ensuring that all relevant factors impacting the fishermen are considered. It is a comprehensive assessment and does not consider fishermen in isolation.

The Great South Bay is an embayment located on the south shore of Long Island, New York. The bay supports a significant commercial fishery for the hard clam (*Mercuria mercenaria*) which is harvested by fishermen, known locally as baymen or clam diggers, who are self-employed and work individually from small boats (less than 10 m) on open access public bay bottom using hand operated rakes and tongs. The bay has a long history of shellfish harvesting and in 1986, slightly more than 104,000 bushels of hard clams valued at \$4.2 million were harvested by approximately 1200 full and part time baymen. This paper presents a preliminary ecological profile of the baymen who harvest hard clams from the Great South Bay.

The Baymen's Environment

The Great South Bay is the largest in a chain of bays created by a series of barrier islands that extend nearly the entire length of Long Island, New York's south shore (Figure 1). The bay is 40 km long, varies in width from 2.5 to 8.0 km and has an average depth of 1.3 m. The area of the bay is approximately 230 square kilometers.

The distribution and abundance of hard clams is influenced by a number of factors including bay salinity, weather, bottom type, harvesting effort, and predator abundance. Hard clams occur throughout the Great South Bay but are more abundant in localized areas distributed throughout the bay (WAPORA 1982). Hard clam abundance also varies from year-to-year (Buckner 1983).

There is a legal minimum harvest size for hard clams of 2.5 cm in thickness which has been in effect since the 1940s. This permits the hard clam to spawn at least once before becoming subject to harvesting (Bricelj 1979), although the illegal harvest of undersize hard clams does occur (Losee 1983). Minimum size is attained at approximately four years of age (Buckner 1984).

Hard clams are marketed according to size with value decreasing with increasing size. Baymen sell their catch to shellfish buyers who operate at various locations along the bay. The price paid to baymen is dependent upon both local and regional supply and demand and is relatively uniform among the buyers. Efforts to establish a baymen's marketing cooperative have been unsuccessful.

The Great South Bay's shellfishery has undergone an evolution in response to various economic, political, regional and environmental factors. Subsistence fishing began soon after Long Island was settled in the early seventeenth century.

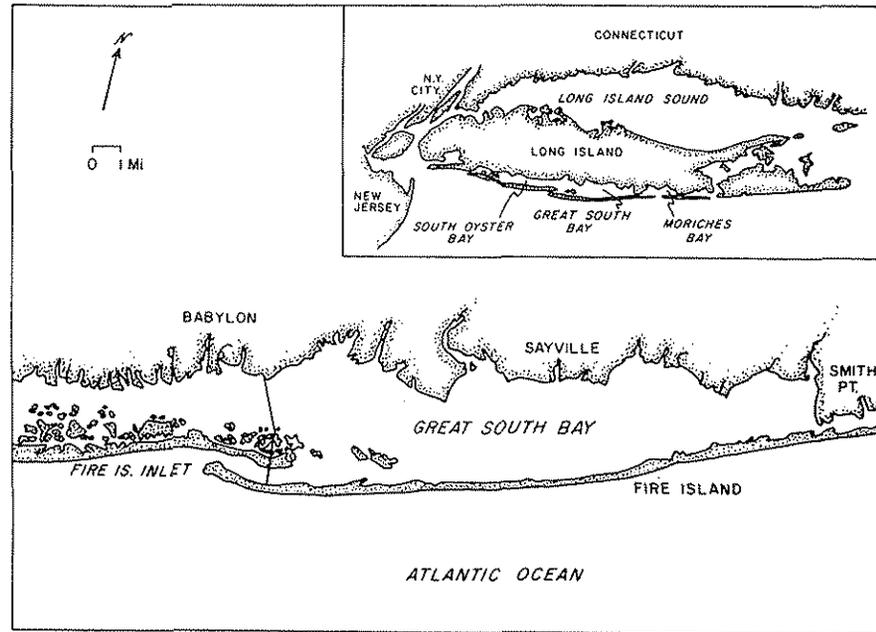


Figure 1. Location of the Great South Bay.

By the early nineteenth century a commercial shellfishery had developed (Gabriel 1921). A bayman, however, was a practical opportunist who shellfished in fall and winter when agricultural tasks were less demanding (Taylor 1983). By the mid-nineteenth century, baymen were harvesting shellfish full time throughout the year. The shellfish industry was centered around the oyster (*Crassostrea virginica*); many baymen worked in varying capacities for oyster companies that were leasing bay bottom at the time for oyster culture and harvested hard clams from public beds primarily when oysters were out of season (April to August) or when there was no work in the oyster fishery while other baymen harvested both oysters and hard clams only from the unleased bay bottom. Shortly after the turn of the century, the bay's oyster industry began to falter due to reduced natural reproduction in the bay and the closing of many of the oyster companies. Consequently, the shellfishery shifted to hard clams. By the 1950s, the bay's oyster fishery was nearly extinct and the shellfishery became totally dependent upon hard clams.

The management regime of the Great South Bay's hard clam fishery has been an important factor in the ecology of baymen. The situation in the Great South Bay is somewhat unique compared to other fisheries as the primary management responsibility does not lie with either Federal or state government. Rather, by virtue of seventeenth century colonial patents, ownership of the bay bottom, and by extension the shellfish growing upon it, resides at the local (township) level.

As a consequence, management is a local concern and prerogative. This has made the management decision making process very accessible to baymen and has resulted in greater baymen participation.

The Baymen

There are both full and part time hard clambers (Figure 2). Part timers are typically either students who harvest during the summer or individuals who have a primary non-fishery related job. Full time hard clambers accept students but resent those with other jobs whom they see as wanting the income from hard clamming without the commitment (Losee 1983).

The number of full time clam diggers is difficult to estimate as the number of annual commercial shellfishing permits issued includes both full and part time harvesters. The number of permits sold over the past 16 years has varied from slightly more than 6,000 to approximately 1,200 (Table 1). The number of baymen is dependent upon a number of factors but hard clam abundance and the resulting catch is probably the most important (Kelpin 1981).

Baymen can work everyday except Sunday when shellfishing is prohibited and they can harvest hard clams throughout the year. Hard clamming is only permitted during daylight hours and inclement weather can, at times, prevent harvesting. Hard clambers return to port each night but there is no single port out of which baymen work. West Sayville is the only community with a distinctive heri-



Figure 2. Baymen harvesting hard clams on the Great South Bay. The baymen are concentrated on an area of high hard clam abundance.

Table 1. Number of commercial shellfishing permits, both full and part time, sold to baymen who can harvest hard clams from the Great South Bay by the New York State Department of Environmental Conservation.

Year	Permits
1970	3,863
1971	4,517
1972	4,534
1973	4,796
1974	5,788
1975	6,149
1976	6,517
1977	6,694
1978	4,913
1980	4,275
1981	3,998
1982	3,145
1983	2,355
1984	1,926
1985	1,406
1986	1,282

tage centered around shellfishing which is due largely to the Dutch immigrants that had settled there (Taylor 1983).

Hard clamming requires little in the way of a sophisticated boat or harvesting gear. Almost any small powerboat can be used to harvest hard clams effectively. Only hand operated equipment, rakes and tongs, is permitted by local law (Figure 3A and 3B). In addition to several pairs of rakes or tongs, the only other equipment required are baskets and a cull box for separating sublegal size hard clams from the catch. A baymen's investment in boat and gear is approximately \$8,000. Operating expenses include the cost of town and state shellfish permits at a cost of \$105 annually, mooring, fuel, and insurance. Cost is not seen as a deterrent to entering the fishery (Conrad 1981).

Baymen are perceived and perceive themselves as rugged, independent individualists. The only extensive study of baymen's attitudes towards themselves and their occupation was undertaken by Kelpin (1981). She concluded that baymen have a strong dislike of anything that would impose control over their lives, including self-interest groups such as baymen organizations. Some of the reasons that clam diggers chose their occupation as opposed to other work were being one's own boss, making a good income, being paid in cash, earning extra money by working more hours and preferring physical work. From various public statements by baymen, other attitudes emerge. Baymen complain that government officials ignore the bay or are only interested in studies (Diamond 1974). Baymen feel that shellfish management has been too theoretical and not practical (O'Malley 1985). Baymen also have a mistrust of government (Nyland 1985).

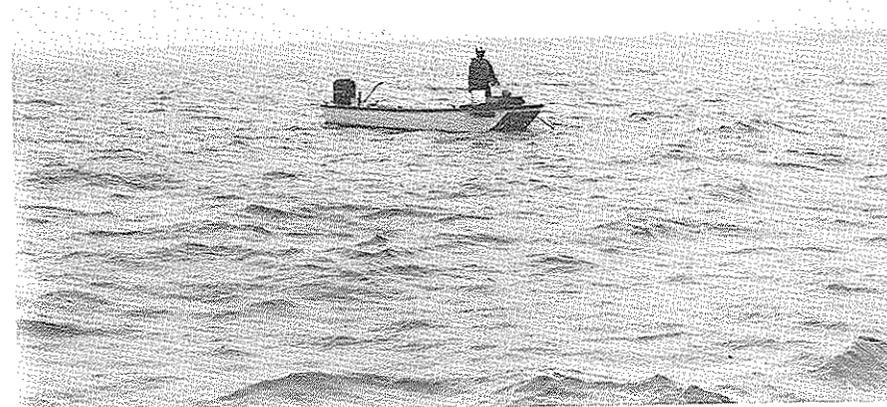


Figure 3A. A typical boat used by the baymen who choose to harvest hard clams by raking. Most baymen are rakers.

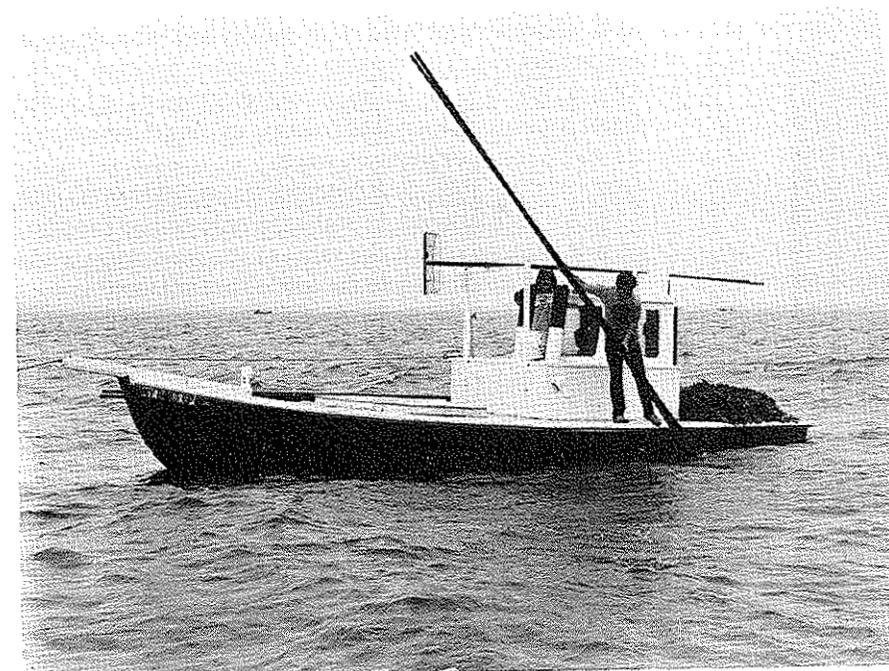


Figure 3B. TONGING for hard clams. The boat and the tongs are similar to what was used to harvest oysters at the turn of the century.

Baymen as Predators

Predation is the capture and consumption of one species by another. The relationship between predator and prey abundance is interrelated and fairly complex. From the predator's perspective, several factors are important. Each predator must obtain sufficient prey (food) to meet its energy demands which includes the energy expended to capture prey. At the same time, if a predator population is too efficient, it risks causing its prey population to fall below the level necessary to sustain the predator population. There are various stabilizing factors that can reduce the probability of prey collapse from occurring: the predator may be limited by some other factor, the predator may be unable to capture prey of a particular size or occurring in certain habitats, or the predator may be able to temporarily switch to another prey.

Hard clams are the principal prey of the baymen. Baymen do not, however, consume the hard clam for the energy needed to effect survival as other predators do, but rather sell the hard clams they harvest for cash. The cash is then used to purchase what is needed for the hard clammer to survive: food, shelter, other necessities and nonessential amenities.

The number of hard clams a bayman catches is dependent upon the abundance of hard clams, his skill at harvesting, and the amount of time spent in harvesting. The abundance of hard clams varies both temporally and spatially due to both natural variability and harvesting. Skill determines how well a hard clammer can locate areas of above average hard clam density and what fraction of the hard clams present are caught. The number of hours a bayman works depends upon his motivation, which includes his income needs, and is limited by his stamina, gear and boat breakdowns, and the fraction of time during which the weather is considered to be too inclement to work.

In evaluating baymen as predators, their cash (energy) requirement must first be determined. It is different for each bayman as both external and personal factors are involved. A bayman's gross income is the value of the hard clams while his net income is the value of the hard clams less the cost of hard clamming (i.e., operating expenses including fuel and insurance and capital expenses such as boat, engine and gear replacement). A bayman's financial obligations are set by family size, the prevailing cost of food and shelter, taxes, the amount of other family income, and personal living preference. Together these factors will determine the minimum, or maintenance income a bayman will find necessary if he is to remain a bayman.

If a bayman is to earn a typical income (an approximation of opportunity cost), the average annual income for all U.S. workers in 1983 was \$17,549.00 which included both full and part time workers (Anonymous 1986). The median regional family income, which shows how a bayman relates to the regional population, in 1983 was approximately \$24,000.00, but this includes many two wage earner families. Based on newspaper interviews, the typical bayman's gross income appears to be in the range of \$20,000.00 to \$25,000.00 per year (Firstman 1983). An annual gross income of \$25,000.00 is probably a reasonable estimate for a bayman's income.

Having estimated income, the number of hard clams that must be harvested to achieve it can be determined. In 1982, the average price paid to baymen for a 500 individual count bushel of littleneck size hard clams, the most valuable, was \$82.44 (Brown and Folsom 1983). Therefore, if a bayman is to make a gross income of \$25,000.00, he would have to harvest 303 bushels or 151,625 hard clams. The price of hard clams is not constant so that if the price of hard clams goes up, less hard clams would need to be harvested but if the price were to drop, more would need to be gathered.

One of the key problems predators must resolve is what to do if the energy (cash for baymen) obtained falls below what is needed for survival. There are several possible options: a predator could shift to another more abundant prey, relocate to another area, reduce energy needs or rely upon stored energy. Failure to accommodate less than needed energy will result in death or extinction. For baymen, the analogous options are switch to other fish or shellfish species or take a second job, leave the Great South Bay for other shellfishing areas, defer fishing or living expenses or use savings accumulated from previously good times. Failure will result in a bayman giving up hard clamming. One other option available to baymen is to supplement hard clamming income with social services which would lower the amount of income necessary from shellfishing. A bayman's choice is very complicated and not all options are viable. Among the factors that will determine the individual option are work preferences and values, future expectations, amount of investment and the alternative income options available.

The collapse of the oyster industry had a significant consequence for baymen as predators. When both oysters and hard clams were present, baymen were 'generalists,' able to switch from one to the other. When the oyster industry failed, baymen were forced to become 'specialists,' totally reliant upon hard clams. The baymen thus lost their flexibility in switching prey so that their fortunes became tied to fluctuations in hard clam abundance.

A second aspect of predation that must also be resolved by baymen is controlling the harvesting (exploitation) rate so as not to reduce hard clam abundance below what is necessary for the baymen's long term survival. The hard clam fishery has been traditionally open access so that the only way to prevent overharvesting from occurring is to control individual efficiency. This has been accomplished, to a limited extent, by the restriction to hand operated gear and establishing a minimum size. However, this has not prevented overfishing from occurring in the past (Buckner 1984).

Baymen as Competitors

Competition occurs when a common resource is used by a number of organisms. Two of the underlying implications of competition are how can an organism gain an advantage over its competitors and how can competition be reduced. The primary common resource with respect to the Great South Bay hard clam fishery is the hard clam. Baymen compete for hard clams with each other (intraspecific

competition) and with other species (interspecific competition), such as oyster drills and crabs, that prey upon the hard clam. In addition to competition for hard clams, baymen also compete with other human groups for access to bay bottom. For example, individuals and corporations have expressed interest in leasing bay bottom to culture shellfish and if this were to occur, baymen would be forced to compete with this group for access to underwater lands and hence hard clams.

Each bayman harvesting hard clams competes with all the other baymen for the resource. It is very difficult for a bayman to gain a competitive advantage over the other baymen. Clam diggers can only work a finite amount of time and because of legislation, only hand operated rakes and tongs can be used which limits technological improvements. The only limited advantages that can be gained are from increased skill, working during more inclement weather than others and locating better clamming areas.

Competition between baymen has been minimized to a certain extent by town imposed residency requirements. There are ten townships on Long Island but only residents of the three townships adjoining the Great South Bay can legally harvest hard clams from the Great South Bay. This, in effect, limits the number of baymen, although because of the fairly large population of the three towns, not to an appreciable extent. Changing town of residency is an option but is very costly. The residency requirement is advantageous to Great South Bay clam diggers when hard clam abundance is high but a serious disadvantage when it is low because other townships with underwater land have similar exclusionary residency requirements.

Baymen working the Great South Bay are also in competition with baymen from other regions of the east coast of the United States for a share of the country's hard clam market. The price baymen receive rises and falls depending upon the supply from other areas. There is very little Great South Bay clam diggers can do to increase the price they receive.

There are twenty-two different species of hard clam predators in the Great South Bay that baymen must compete with for hard clams (Buckner 1984) and predation is a major factor in determining if a particular area is a productive shellfish bed (Mackenzie 1977). Hard clam predators have an advantage over baymen in that they prey upon hard clams that are smaller than can be legally taken by baymen. Consequently, baymen harvest whatever the other predators have not.

To put predation into perspective, consider the following comparison. Two of the more abundant hard clam predators of sublegal size hard clams are the oyster drills *Eupleura caudata* and *Urosalpinx cinera* which have a mean bay density of 3.4 per square meter (WAPORA 1982). According to WAPORA (1982), an oyster drill consumes 2.1 hard clams per year (it can consume other prey) or approximately seven sublegal hard clams per square meter per year. The mean density of legal size hard clams is 2.4 per square meter (WAPORA 1982) so that oyster drills may consume nearly three hard clams for every hard clam that could be harvested by a bayman.

Baymen are also in competition for access to the hard clams. Because of potential economic returns, individuals and corporations have expressed interest in leasing bay bottom for shellfish mariculture. If this were to occur, areas of bay bottom would be turned over to private interests from which baymen would more than likely be excluded. As leasing increased, the area available for baymen to harvest would decrease which would, in turn, reduce the number of baymen the bay could support.

The leasing of Great South Bay bay bottom for oyster mariculture was a major issue for baymen in the latter part of the last century (Kassner 1986). Oyster cultivation was economically attractive but it required the leasing of bay bottom upon which small oysters could be 'planted' and then allowed to grow to market size. Oyster cultivation thus created two different harvesting regimes in the bay: leased bottom upon which access was limited to the planter (lessee) and unleased or public bottom upon which baymen could harvest.

By the 1880s, considerable capital had been invested in oyster cultivation, the oyster industry was thriving and a sizable fraction of the bay bottom had been leased. Access to bay bottom resulting from oyster cultivation became a major source of conflict between the 'planters' and the 'free baymen.' The planters supported the leasing of bay bottom for oyster culture. The free baymen, baymen who worked the areas of the bay that were not leased, fearing that they would soon be totally excluded from the bay, wanted leasing ended and unrestricted access to all the bay. The conflict was bitter and a major political issue. The proponents of the free bay, after extensive lobbying, were able to prevail with local government and by the turn of the century, no new leases were being issued.

Other Factors Affecting the Baymen

All organisms are subjected to environmental (external) factors that can impact baymen. The price baymen receive for their hard clams, for example, is set by the regional economy as well as supply and demand. Changes in any number of government regulations and policies can increase operating costs. Baymen must obtain mooring for their boats and there is the possibility that the shellfishery will be closed because of pollution. Weather can affect both hard clam abundance and working conditions.

These and other factors have the potential to reduce the viability of hard clamming as a livelihood. For example, if a bayman cannot get mooring because all of the waterfront has been developed for private housing, he will be unable to harvest hard clam. The nature, timing, and importance of these other factors are variable and most are not well anticipated by baymen. They can, however, pose a serious threat to baymen.

Adaptation and the Baymen

The ability to survive (both for the individual and the population) changing conditions and circumstances (stress) is contingent upon adaptive responses. The

adaptive responses vary with the degree of stress imposed and if the stress is too severe, death or extinction will result. Each adaptation has a consequence (i.e., lower growth, reduced activity, and decreased reproduction) and it should be noted that the range of an organism's adaptive response is limited. In the case of fishermen, the adaptive response is constrained to what is consistent with the fishermen's attitudes towards their occupation. Also, what was adaptive in the past may not be adaptive or even maladaptive in the future.

The most serious and omnipresent stress confronting baymen is a decline in the abundance of hard clam. This is accepted by baymen as an occupational hazard (Keplin 1981) but at the same time baymen believe that some action should be taken to increase abundance. The baymen's adaptive response is to use their potential power to have government take actions to either increase the hard clam harvest or provide some form of financial aid to the fishermen. The various actions are broadly categorized as 'shellfish management.'

Because management of the Great South Bay's hard clam fishery is at the local level together with the nature of the fishery, baymen are in a position to play a particularly active role in the management process. Elected government officials, eager to satisfy an important and vocal constituency, generally seek to satisfy the baymen. The relationship between baymen and government has even been institutionalized by local government through the creation of 'shellfish advisory commissions' comprised of baymen to provide advice on matters pertaining to the industry.

Fishery management is, in theory, rational decision making. Through the management process, the baymen are in a position to control their own destiny rather than be subjected to the vagaries of the resource. The baymen have considerable political power and as a consequence, have been able to block any management action they find unacceptable, even if it is based on merit. Management has become more often a political issue than a scientific matter.

The critical management issue is how to ensure the long term sustained harvest of hard clams. As Hardin (1968) points out in the 'tragedy of the commons,' in an open access resource (such as the hard clam fishery of the Great South Bay), there is a tendency to expand exploitation (harvesting) beyond the capacity of the resource to sustain itself. Overfishing of the hard clam did occur in the late 1970s (Buckner 1984) and no action has since been undertaken to prevent this from reoccurring. There are two basic solutions: either limit the harvest (i.e., catch quotas and limited entry) or augment hard clam stocks to increase hard clam abundance and sustained yield.

Augmentation does not interfere with open access or restrict baymen and maximizes the number of clam diggers that are employed in the fishery. Restricting harvest increases governmental involvement, limits traditional baymen freedoms, and reduces the number of people that can be employed. Augmentation is consistent with baymen attitudes while restricting effort is not. Baymen favor augmenting the natural abundance of hard clams but have successfully opposed any action to restrict harvesting. The prevailing management policy has thus emphasized augmentation.

Considerable sums are expended for augmentation and augmentation can be a successful strategy for addressing depressed hard clam abundance if implemented correctly. Augmentation measures, however, have not been rigorously evaluated. The planting of sublegal size hard clams, for example, is a major program but it may not be able to make a significant impact on the fishery as practised (McHugh 1981). In addition, for enhancement to be successful, some type of harvest restriction is necessary or else the additional hard clams will lead to more baymen without any individual bayman benefiting.

There are many other issues facing baymen. Their adaptive response is the same: bring the matter to local government and urge government to take action. Government is generally supportive of the needs of the baymen and will act at their behest. The baymen, however, are only likely to endorse and government likely to implement those actions which are consistent with baymen attitudes even if the actions are the less effective options. Baymen consider this to be good management even though at times it provides a less than optimal solution.

Discussion

The ecological profile of the Great South Bay clam diggers defines their environmental requirements and identifies their various interactions. This information provides the background and framework for understanding how the baymen adapt to their environment and can be used to assess baymen adaptive responses. It can thus be both descriptive and predictive.

For the baymen, the abundance of hard clams is perhaps the most critical factor in their survival. If hard clams decline below a bayman's maintenance catch, he will be forced to make adjustments and if the drop is severe enough, probably leave the shellfishery. Baymen ask government to solve this problem on their behalf but will only endorse options that are consistent with their occupational attitudes. For this reason, increasing hard clam abundance is favored over control over the exploitation rate. While augmentation can be a viable option, unless properly implemented it can be of little or no value.

The proper role of government in management needs to be assessed. Government is in a position to implement technically valid management actions even if they are opposed by baymen. Government more often chooses to defer to the baymen. While this has resulted in overexploitation and economic inefficiency, it has minimized government interference in the dynamics of the baymen and their interrelationships. Thus, the baymen population is free to evolve, even if it leads ultimately to their extinction.

The ecological profile approach to fishermen presents a comprehensive portrait of the fishermen and can be expanded as necessary. It does not test ecologically based hypotheses but these can be derived. For example, in considering the baymen as predators, the question of the advantages of being a specialist or generalist is covered in terms of the oyster-hard clam fishery that had existed. The benefit with the ecological profile is that the concept is presented in the proper context.

Once ecological profiles have been done for several fishermen populations, comparisons of the various fishermen populations could be made. These could reveal important similarities and differences among fishermen. These, in turn, may lead to a better understanding of fishermen in general. The ecological profile also has potential management applications as it reveals fishermen dynamics and it could be used to predict how fishermen respond to management imposed externalities.

Acknowledgements

The support of Henrietta Acampora, Supervisor of the Town of Brookhaven and the Brookhaven Town Board is gratefully acknowledged. Special thanks go to John A. Black who has offered many useful insights and criticisms in addition to reviewing the numerous drafts.

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Shrimpers and Turtles on the Gulf Coast

The Formation of Fisheries Policy in the United States

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ABSTRACT I describe the on-going case of fisheries policy making in the United States that involves administrative agencies, federal and state legislatures, and courts in a complex set of issues surrounding the Endangered Species Act. Environmentalists support gear regulations that prevent turtles from drowning in shrimp trawls. Shrimpers oppose these regulations because the devices diminish their catch, are dangerous, and expensive to use. Shrimpers are against any reduction of catch because shrimp prices are low due to un-taxed imports.

This case provides an example of the complexities of fisheries regulation in the United States and shows how regulations may influence the livelihoods of people who are not their immediate object of concern. It further emphasizes the necessity to understand modern fisheries in their broadest political and economic contexts.

Introduction

There is an emerging consensus that fishing cannot be understood in terms of boats or even communities, but that it must be understood in terms of its wider social, political, and economic context, the actions of other segments of the population, near or distant, that affect any aspect of the fishing industry, fishermen, the waters they fish, or the fish in them.

"Fishing communities are often thought of as remote enclaves of highly independent people, whose cultures separate them from neighboring populations" (Cook 1987:5). This is true of the United States as of any of the tribal or peasant contexts discussed in the same issue of *Cultural Survival Quarterly*, which is largely devoted to discussions of small scale fishing around the world. "Alabama shrimpers often give the impression that they lead a lonely life at sea, where day after day, night after night, is spent in solitary pursuit of shrimp" (White 1988:1). White shows not only that collective activities such as fleet fishing are fundamental to shrimping but also that the Bon Secour shrimp industry has been shaped by outside historical forces.

Smith (1988:30) writes that "the dynamics generated from the economic, political and technological contexts within which commercial fishing operates today" rather than storms or demons "pose the most critical 'clear and present dangers'." Orbach and Johnson (1988:9) conclude that the fishing industry in the Florida Keys "... is only a small part of an increasingly expanding and increasingly complex coastal environment." They point out, as Harris (1986) does, that the majority of the social science literature on fishermen has focused on fishing communities or the fishing industry itself and not on the policy processes that bring about changes. They argue that increasingly in the U.S. "public policy

MAST 1988, 1(2): 196-214

decisions external to the fishery itself have significant effects on the prosecution of the fishing industry" (Orbach and Johnson 1988:2). Meltzoff concludes that in the Florida Keys the "most important factor informing allocation and management of resources is the politics of conservation" (1988:23).

Orbach and Johnson (1988:9) argue that social scientists should go "beyond traditional cultural ecology approaches" to incorporate the role of public policy processes and its actors. Sinclair (1986:38) in his review of theoretical issues in the sociology of fisheries, suggests the importance of the question of how participants in fishing are linked to the wider economic system.

Fisheries all over the world are dynamic, not simply the conservative aspect of a shore based economy. Befu (1980) documents changes in the fishing industry of the Inland Sea of Japan and shows how they were directly related to matters of national and local policy.

Shrimpers on the Gulf of Mexico are involved in a complex tangle of legislative, regulatory, and judicial action whose origins are far from local and whose consequences promise to be significant for them.

The United States passed a law to protect endangered species. It also passed legislation to regulate fishing out to its 200 mile boundary and gave the National Marine Fisheries Service (NMFS) the duty to administer fisheries and protect endangered species in the 200 mile management zone. NMFS is a branch of the National Oceanic and Atmospheric Administration (NOAA), which is in the Department of Commerce.

When a kind of sea turtle that visits the waters of the Gulf of Mexico was placed on the list of endangered species to be protected, NMFS was responsible for ensuring its safety. Sometimes shrimpers catch such turtles in their trawl nets. Under pressure from environmentalists, NMFS made rules that required that Gulf shrimpers use a device to allow turtles to escape their nets. Shrimpers protested that the device is dangerous, costly to operate, and diminishes their catches.

Representatives and Congressmen from affected areas attempted to modify the law concerning endangered species. The state legislature of Louisiana passed a law to forbid its personnel to help the United States law enforcement agencies enforce the regulations, and their attorney general filed suit to revoke NMFS's administrative rules. A Federal court stayed the rules while the case was in review. An Alabama senator blocked legislative action to fund the Endangered Species Act until the court upheld the rules. Then the senator negotiated an amendment to the Act which would delay the rules while new studies are done.

The main impetus for these actions has nothing to do with fishing or shrimping. The consequences for shrimpers are by-products of other processes and concerns about the politics of the environmentalist movement and the continuing struggle for power between the United States Government and its constituent states and local politics within states.

Background

In 1976, the United States Congress passed the Federal Fisheries Conservation

and Management Act which gave the Federal government regulatory authority from three miles to two hundred miles offshore and created eight regional fishery management councils under the Secretary of Commerce. One of the regional management councils is the Gulf of Mexico Fishery Management Council which covers the Gulf of Mexico, including Alabama. The Commissioner of Alabama's Department of the Marine Resources designates a Director of the Marine Resources Division to represent Alabama on the Council. One other representative and six at-large members are selected by the Secretary of Commerce from a list furnished by the Governor. The Regional Director of NMFS (National Marine Fisheries Service) is also a voting member of the Council. There are non voting members including representatives of the U.S. Fish and Wildlife Service, Department of State, Coast Guard, and Gulf States Marine Fisheries Commission.

University and government personnel with appropriate technical knowledge constitute a scientific and statistical committee (see Paredes 1985). Advisory panels are composed of persons who know about various aspects of fishing, and the Council is coordinated by a full-time executive director, whom the Council employs, and a staff.

The Marine Resources Division of the Alabama Department of Conservation and Natural Resources regulates fishing in salt waters out to three miles, the state boundary. They determine seasons, restrictions on fishing gear, and size limits. The Department Commissioner has authority to establish rules and regulations.

The Alabama legislature is responsible for license fees, regulating certain methods of fishing, aspects of oyster management, and has ultimate authority in all conservation matters (Wallace and Hosking 1987). The regulating authority of the Commissioner of the Department of Conservation and Natural Resources is restricted by the partial regulation of oysters, shrimp, and finfish by legislated statute (Wascom 1987).

The five Gulf states (Florida, Alabama, Mississippi, Louisiana, Texas) belong to the Gulf States Marine Fisheries Commission, which is to assist the states to coordinate their regulation of their territorial fisheries. Each state is represented by its top fisheries administrator or his designee, a legislator, and a knowledgeable citizen appointed by the Governor. The Commission is to study Gulf fisheries and recommend joint legislation (Wascom 1987). Explaining its composition and functions, one of its administrators commented to me that the Commission is the institution that most closely resembles the Confederacy of the American Civil War.

Johnson (1987a:24) laconically states that "the existence of multiple institutions with overlapping claims to manage migratory marine fishery resources has created an unnecessarily complex political situation."

Coastal Alabama

The Mobile river branches into a floodplain delta on its way to Mobile Bay, one

of several bays along the northern Gulf of Mexico. Wherever rivers run into such bays, there are areas of marsh where primary production of the food chain begins. They provide nursery areas and habitat for the young and juveniles of commercially important species (Stout 1979). Shrimp spawn offshore. The young larvae enter the bays, develop in the marshes, and leave the bays as young adults to spawn in the Gulf and start the cycle over (Wallace 1986).

The shrimp fishery is the most important commercial fishery in Alabama and the other Gulf states. Shrimp trawls were first introduced around 1918 along with motorized boats, and in the 1950s small inshore boats began to be replaced by larger Gulf boats capable of longer offshore trips (White 1977; Swingle 1979; Maril 1983). Internal waters provided a smaller percentage of the total catch as the offshore catch increased. This process of using larger boats to seek shrimp farther from shore has continued as shrimpers have begun to trawl royal red shrimp, discovered in 1960, and other species at deeper depths and farther from shore, 70 miles or more. Trawling at such depths requires larger boats and heavier gear (Perkins 1987a).

The Alabama Department of Conservation and Natural Resources manages shrimp by protecting young shrimp in the marshes and when they begin to move into the Gulf. To allow juvenile shrimp to grow and protect their marsh environment, some of the marshes where shrimp grow, are permanently closed to all shrimping. Department of Conservation and Natural Resources personnel monitor the size of shrimp, and close areas to shrimping until they reach harvestable size of 68 or fewer per pound. These practices are meant to insure that sufficient adults survive to spawn offshore and provide the next year's population of larvae which will grow into shrimps (Wallace 1986).

Management decisions must match shrimper perceptions fairly closely to be effective (Crouch and Miller 1987), as recent events in Jackson County Mississippi indicate. Waters within half a mile offshore had been closed because shrimp had not attained legal size. Several fishermen began taking shrimp in spite of the closure and were arrested. They claimed that shrimp in the Pascagoula River had reached legal size, but the area had not been opened to shrimpers. The Mississippi Bureau of Marine Resources does not have a sampling station in the Pascagoula River or channel, but agreed to test the shrimp there after about four shrimpers were arrested and eleven others cited. One of them said, "I did it . . . because it's a just cause. We're fighting to get the river open" (*Mobile Register*, 17 October 1987).

The viability of shrimp populations does not appear to be affected by fishing pressure as each female produces between half a million and a million eggs. Only a small portion of the eggs survive the migration inshore to the marshes and predators in the marshes. The catch of shrimp in any year is not affected by the number of shrimp the previous year. The major factors that control shrimp populations are not fishing pressure but environmental factors such as large amounts of fresh water from spring floods and cool water temperatures (Wallace 1986).

The Policy Formation Process

One of the most debated fisheries management issues in the Gulf Coast region is not in the hands of the states but the United States Congress, the National Marine Fisheries Service, and the courts.

In 1978, marine turtles were included in the Endangered Species Act, and the National Marine Fisheries Service (NMFS) was charged to protect them at sea and the Fish and Wildlife Service was to protect them on land.

The first device to allow turtles to escape from shrimp trawls was a 1980 adaptation of the 'cannonball shooter,' which has been used for a long time to clear shrimp nets of cannonball jellyfish and rubbish (Fee 1987). Although there are several varieties of turtle excluder devices (TEDs) (Edwards 1987) the National Marine Fisheries Service TED is a wire cage about three feet on a side, with a top hinged at the front. A chute composed of bars runs from the bottom front to the top back. The motion of the water through the trawl washes any sizeable object such as a turtle or fish that enters the front of the box up the chute and through the hinged top to freedom. The shrimp are supposed to continue through the bars of the chute into the bag of the trawl behind it (Taylor *et al.* 1985).

NMFS developed the TED and tested it, hoping that it would be attractive to shrimpers since it would eliminate much of the unwanted by-catch of jellyfish, finfish, and trash as well as turtles. In 1983 NMFS promoted a voluntary TED program. They argued that only the widespread voluntary use of the devices could avoid disastrously expensive legal confrontations with the conservationists determined to support the enforcement of the Endangered Species Act (Fee 1987).

By January 1986, it was clear that the voluntary program had failed after five years of effort.

The shrimping community . . . not only refused to welcome this gift but, after a close look, sent it packing. Baffled environmentalists were at once puzzled and irritated. Shrimpers, it seemed to them, were not only ambivalent about the welfare of the turtles, but also apparently indifferent to their own opportunities (Edwards 1987:37).

In February 1986, the regional director of the U.S. Fish and Wildlife Service in Atlanta, Georgia, joined with conservation groups and appealed to the Gulf of Mexico Fishery Management Council to require the use of TEDs on all Gulf shrimp trawlers. In July, the Shrimp Committee of the Gulf Council recommended that TEDs be used at certain times and places. In August, a National Oceanic and Atmospheric Administration administrator, Tony Calio, summoned representatives of the Gulf shrimp industry to Washington for a briefing on proposed regulations to require TEDs in Texas and Florida and other areas.

Two days later, the Center for Environmental Education, a private environmentalist group, informed the Department of Commerce it intended to sue NOAA and NMFS to have all shrimp trawlers equipped with TEDs by January

1987. The next week, on 29 August, Calio invited the Southeastern Fisheries Association and the Texas Shrimp Association to participate in mediation of the TED issue with conservation groups.

From October to early December there were four negotiating sessions, and on 12 December a report was issued. In February 1987, there was a 45 day period of public hearings on TED regulations. Hearings were scheduled at Galveston, Port Aransas, and Brownsville, Texas; New Orleans, Houma, and Cameron, Louisiana; Mobile, Alabama; Key West, Florida; Savannah, Georgia; Charleston, South Carolina; and Morehead City, North Carolina (Fee 1987).

In these hearings and in other contexts it has become clear that NMFS technical personnel and shrimpers do not agree in their interpretations of the results of using TEDs (Blanchard 1987). Edwards (1987) spoke with shrimpers who had used TEDs on the Atlantic, Texas, and Louisiana Coasts where the original 'shooters' had been developed to eliminate unwanted by-catch from the trawl-nets. He supposed that such shrimpers would see an advantage to TEDs beyond Federal regulations. He reports decreased catches with TEDs. A Texas shrimper said: "I've never been able to make them quit losing shrimp. That doesn't mean there aren't some people that can, I just was never able to." A Louisiana shrimper said: "I just wanted to see how they worked. I thought they had something better than mine. I'm always in favor of any kind of improvement, and if theirs were better than mine, I was going to pull theirs." (Edwards 1987:39). Edwards concludes that many innovators are trying to develop better TEDs as there will be a market for them. He wonders why such innovation did not begin sooner in the nine years since NMFS "declared war on turtle drownings" and (1987:39):

Far more apparent is the host of widespread complaints about the NMFS TED, criticism based on sincere efforts to make it work. The device is now widely branded as both impractical and dangerous. Thus by concentrating R&D (research and development) and promotion efforts for so long on its own TED, NMFS actually appears to have increased, rather than lessened, shrimpers resistance to mandatory use of turtle excluders.

Jay Johnson, the assistant general counsel for the National Oceanic and Atmospheric Administration, who was involved in negotiating the TEDs rules, reports that the meetings were for gathering and presenting data. Everyone, he says, agreed that any means should be used to prevent the extinction of Kemp's ridley sea turtles and prevent the decimation of other species. A secondary consideration was to minimize adverse effects on the economics of the shrimp industry "as much as possible." They heard about every turtle sighting and capture that had been recorded.

And NMFS continued to supply information throughout the negotiation process. The government took no other role, nor did we indicate what we wanted in the way of the regulation - except that we wanted an immediate solution. And for that reason, we just stood back and let the environmentalists and the industry have a go at each other (Johnson 1987b:236).

Shrimpers were represented by representatives of four shrimping associations

and two shrimpers, one lawyer, and one former government bureaucrat. The environmentalists were represented by the former head of the United States' Justice Department's Wildlife and Natural Resources section, a former staff director for the House of Representatives' Merchant Marine and Fisheries Committee (both lawyers who represented the Center for Environmental Education), a representative from the Monitor International Fund for Animals who had worked in the State Department, and a representative from Greenpeace.

The agreement requires the use of one of four different kinds of TEDs, each of which has passed NMFS tests that they allow most turtles to escape the trawl nets. Even though shrimping industry representatives were involved in the decision, the associations and shrimpers have since repudiated the agreement (Johnson 1987b).

Johnson admits there are doubts about whether TEDs save turtles, whether turtles are caught in shrimp nets, and whether shrimpers lose shrimp, but says they used the best data that exist. He says there was a problem with representation. "The vehemence of the opposition of Mr. Tee John Mialjevich (a representative of a Louisiana shrimpers' association) and his membership has been absolutely amazing. I have never seen more people get involved in any fishery issue - ever" (Johnson 1987b:237). He summarizes the attitude of opposing Louisiana shrimpers as: "a) we don't catch turtles, b) TEDs don't work; or c) we can't make money if we use them" (ibid.:238).

Patti, a shrimper, fleet owner, and processing house owner, in Pensacola, Florida, just east of Mobile, characterizes the NMFS data Johnson called the "best available," as "quasi-scientific and semi-factual" (1987:15). He points out that of 6,030 boats shrimping in the Gulf, only 865 or less than 15% were represented in the negotiation, while larger groups were not invited to participate. He continues that:

All the groups are very localized, and no central core group exists to represent all the shrimpers. We certainly were not able to put together the type of think tank that the environmentalists assembled. In fact, it has been almost impossible to find a good environmental lawyer to represent us, since most of these special attorneys are on retainer to an environmental group or are on the staff of one (1987:34).

This is Patti's description of the process Johnson described above:

The representative shrimpers went to the meeting prepared to negotiate in good faith on behalf of their members' welfare and the well-being of the turtle. The proceedings began, and while the industry spokesmen were in private caucus, Dr. Tony Calio, administrator of NOAA, told them that if they did not come to terms with the environmentalists in the meetings, he would hand down a federal mandate requiring TED use on all vessels, in all waters, 365 days a year.

This ultimatum totally stripped the shrimpers of all bargaining power. Instead of the administration providing unbiased mediation, they intimidated the industry representatives and forced them to yield. The shrimpers then did what they could and attempted to cut the best deal possible, allowing for restriction of seasonal TED use (ibid.).

In June 1987, he reported the outcry among shrimpers against the promulgated regulations in public meetings. "Thousands of shrimpers have shown up at TED meetings, and thousands of others support them but were not able to attend. (They must fish in the daytime, when the meetings are held.)" (ibid.).

A large number of shrimpers are publicly militant about the use of TEDs and plan direct defiance of the rules at whatever cost. The militant faction is quickly growing and will soon reach the boiling point. Only the removal of the TED requirements will defuse them now (ibid.).

He continues, in a letter to his senator:

These shrimpers do not wish to defy the law. They are honest, hardworking and law-abiding, but required use of the TED will destroy the only way they have of making a living. Many families have been shrimpers for generations. Most shrimpers are not fleet owners but rather single-boat owner/operators barely able to make a decent living. Many times, a trip will not even pay fuel and crew cost. Many of these people are uneducated and are not able to understand or fight government regulations (ibid.).

He welcomes NMFS research, offers shrimping industry cooperation, support for a turtle hatching program, and matching funds (with environmentalists and government) for such programs; supports gear research for TEDs and sanctions against turtle harvesting countries; and asks for legislative relief from the executive branch's regulations that hurt shrimpers and do not help turtles.

Under the regulations, all boats 25 feet or longer would have to use TEDs while trawling in offshore waters. Smaller boats would have to limit towing time to 90 minutes or less unless they were equipped with an excluder device.

In 1985 the legislation that authorized the Endangered Species Act expired. For three years, the program has been supported with emergency appropriations while the Act has been debated. The reauthorization bill would authorize 56 million dollars per year with 4.3% increases each year through 1992 to study 3,000 species and protect 1,000 species listed as endangered.

In 1987, Johnson wrote (1987b:238)

I don't think that a protest is the way to stop the government from going forward. Too much momentum exists right now. The regulation probably won't be modified significantly, but the Endangered Species Act might. This is a sensitive issue that happened to arise at a time when the Endangered Species Act was up for reauthorization. I sometimes think that the biggest danger to an endangered species is to have the case for an exception presented while Congress is considering amending the Act. It may well be that Congress will do something to stop these regulations from entering into force. I am not expecting this, but it is certainly a possibility.

In November 1987, the Merchant Marine and Fisheries Committee of the United States House of Representatives, in its debates on amendments to the extension of the Act, voted against an amendment to delay the requirement that Gulf shrimpers use TEDs, but approved an amendment to postpone the requirement

for two years in in-shore waters such as bays and sounds. The chairman of the committee introduced the in-shore amendment because there are few turtles in bays and sounds. He opposed the broader exclusion of TEDs, as he said, because of:

the practical politics of the thing as I read it. The environmentalists, who we have to contend with whether we like it or not, would approve my amendment but would not agree to the other amendment. So to get a bill through, we had to take this position (*Mobile Register*, 20 November 1987).

The amendment to delay TEDs was supported by representatives from Florida, Texas, Alabama, and Louisiana. The Texas and Louisiana representatives told the committee that NMFS data were from the Atlantic, where conditions are different from the Gulf. They argued that TEDs would reduce catch, demand extra fuel, and higher insurance rates and that the combined effects of these consequences would be to put many shrimpers out of business.

A Rhode Island representative suggested that there were too many shrimpers and too few shrimp. A representative from Massachusetts supported NMFS observations and projected them to the Gulf to conclude that shrimpers catch and kill 3,000 turtles of endangered or threatened species.

The Texas and Louisiana representatives maintained to the contrary, that shrimpers' experiences contradict such findings, and proposed the alternative of turtle hatcheries as more effective and less expensive. The amendment failed on the House floor, when the House approved reauthorization of the endangered Species Act by a vote of 399 to 16.

The Attorney General of Louisiana filed a lawsuit against the U.S. Department of Commerce on behalf of the state. He sought a judicial review of the regulations governing the shrimping industry, especially those that require TEDs. He indicated the regulations are not supported by data, are arbitrary and capricious, and that NMFS, a branch of the National Oceanic and Atmospheric Administration of the Department of Commerce, failed to follow administrative procedures. He also charged the regulations were impossible to enforce, deprived shrimpers of their livelihoods, and its negative economic consequences created an undue burden on the state and shrimpers.

A participant in the seafood industry said the TEDs legislation was not about turtles at all, but a continuation of years of attempts of sports fishermen to eliminate trawling in the Gulf. Shrimpers reported losses of 30% of their catch as opposed to the NMFS estimate of 10% or insignificant losses.

The Alabama Sea Grant Extension Service held workshops in February 1988 in Bon Secour and Bayou La Batre to help shrimpers cope with the regulations, which were to go into effect on the first of March 1988.

Howell Heflin, a senator from Alabama, put a hold on legislation to renew the Endangered Species Act in the Senate. The legislation could not be brought to the Senate floor without informing Heflin so he could offer amendments and raise objections. Such a 'hold' acts as an informal agreement with the Senate

majority leader to delay action on the bill. The bill was delayed from reaching the Senate floor until Heflin removed his hold. Environmentalists remained opposed to amendments that would weaken the endangered species law or establish a precedent for congressional action to overturn administrative decisions.

Shrimpers from Florida to Texas continued to complain and to request NMFS conduct local studies. NMFS officials said they would sponsor more workshops to explain to shrimpers how to use the devices.

As the March 1, 1988 implementation deadline approached, shrimpers and processors reiterated estimates that they would lose between 25% and 50% of their catch, and that the regulations had nothing to do with turtles, but were meant to eliminate trawling to protect finfish for sports fishermen. Such estimates were common in the media. In my visits with shrimpers in western Florida, southern Alabama, and southern Mississippi, I heard the same story repeatedly. Shrimpers would lose up to half of their catch. They could not survive if they were forced to use TEDs. Someone was trying to drive them out of business.

The Coast Guard and the National Marine Fisheries Service were to enforce the regulation that TEDs be used on trawls of boats 25 feet or longer in waters out to 15 miles. There were few federal agents to enforce the new regulations, and some state agencies were approached to help. The Louisiana legislature passed a law that state agents could not help federal agents enforce TEDs regulations. The department applied to the state attorney general for a ruling as there is a contradiction between federal and state laws. The attorney general and the Concerned Shrimpers of America, meanwhile, had sued to reverse the TEDs regulations. A U.S. District Court Judge found against him, and he said he would appeal.

In late April, a U.S. District Judge in New Orleans granted a stay on enforcing federal TEDs regulations until the attorney general's lawsuit was resolved. Again, shrimpers repeated that they suffered significant reductions in catch when they used TEDs and that they were not a threat to endangered species of turtles.

On June 7, 1988 the president of the National Audubon Society urged Senator Heflin to remove his hold. He said:

Sen. Heflin is holding the Endangered Species Act hostage, protesting the requirement that American shrimp fishermen use special devices to prevent threatened and endangered sea turtles from drowning in shrimp trawls (*Mobile Register*, 8 June 1988).

Heflin said figures the environmental groups had provided showed that shrimpers cause only about one percent of turtle deaths and injuries.

Alabama environmentalists started a letter writing campaign urging Heflin to stop blocking the renewal of the Endangered Species Act. National environmentalist groups reported that thirty-nine (of one hundred) senators signed a request that the Senate Majority Leader move the bill. An Audubon Society wildlife specialist maintained that TEDs "were under the act and it's time for Heflin to back off." A member of the Mobile County Audubon Society agreed,

"I don't know why he's being so reluctant." The executive-director of the Alabama Conservancy concurred, "it's ridiculous that he's holding up the Endangered Species Act. He's repeatedly given us (environmentalists) problems," called him an obstructionist on environmental issues, suggested he had sided with strip miners and timber interests in the past, and now he was siding with shrimpers (*Mobile Register*, 15 June 1988).

The next day, the Mobile newspaper reported that environmental groups "flayed" Heflin. A spokesman for the Center for Environmental Education (a party to the original TEDs negotiations) held a press conference in Washington at which he charged that Heflin was factually wrong, incoherent, and presented no alternatives to save sea turtles. Heflin responded that his data came from governmental and environmental groups sources and maintained that TEDs imposed unfair economic hardships on shrimpers. He called for further testing before the regulations should be enforced. He suggested that shrimp eaters and the shrimp industry were endangered species as well as the turtles. He concluded, "that all the data being used in this discussion is suspect and therefore a full study be conducted by unbiased researchers" (*Mobile Register*, 16 June 1988).

Heflin's office argued that the bill had been held up for two or three years, that it would continue under existing law, and that the Department of Interior had received funds the past two years. Environmentalists countered that the new bill would provide more adequate funding, and increase funding for state agencies (*Mobile Register*, 19 June 1988).

The National Marine Fisheries Service reported that within a week after shrimping season opened on June 8, 1988, five dead sea turtles were found along the Alabama Gulf Coast. Under the current Endangered Species Act, accidental catching of an endangered species is illegal. An Orange Beach (Alabama) resident announced that if TEDs regulations were not enforced, he would sue the Federal Government for failing to enforce the Endangered Species Act.

Early in July lawyers for the Justice Department and the Center for Environmental Education urged the U.S. Circuit Court of Appeals to revoke the April injunction that blocked enforcement of the TEDs regulations. One of the judges pointed out that it was the middle of the shrimp season and shrimpers would have to start using TEDs overnight. A Center for Environmental Education lawyer replied that there was no surprise, that the regulation had been on-again and off-again for ten years and that shrimpers had the TEDs ready for use. A lawyer for the Louisiana attorney general's office repeated that TEDs reduce shrimp catches and do not protect turtles. The U.S. Justice Department lawyer replied that he was being selective in the studies he cited and maintained that other studies have shown that shrimp trawling is dangerous to the turtles and that TEDs reduce shrimp catches only 5 percent. The assistant attorney general of Louisiana contested that finding and argued that the TEDs law discriminates against shrimpers because dredging and beachfront building kill more turtles than shrimpers do.

On July 11 the federal appeals court affirmed the lower court's dismissal of the Louisiana attorney general's lawsuit that challenged the TEDs law and or-

dered shrimpers to begin using them on the first of September. This decision, issued without opinion, revoked the stay on the TEDs enforcement.

Meanwhile, in Washington, Senator Heflin and the chairman of the Senate environmental protection subcommittee worked on a compromise agreement that non-governmental scientists would conduct studies of endangered turtles and the effectiveness of TEDs to determine whether the turtles are actually endangered, whether TEDs are effective, and how TEDs affect shrimp catches. Enforcement of the TEDs law would be delayed until May 1989 in offshore waters and May 1990 in nearshore waters. With such a compromise, as an amendment, Heflin removed his hold on the Endangered Species Act, and it was voted on in the Senate. The agreement is similar to the one rejected in the House of Representatives earlier in December.

Mrs. Jackie Taylor, president of the Alabama Chapter of Concerned Shrimpers of America, said she did not expect shrimpers to accept the court decision without a struggle, but that the decision was not in the political arena rather than the courts. She suggested that a test of the effectiveness of the law would be for shrimpers to refuse to use the devices, but hoped that the TEDs requirement could be removed from the Endangered Species Act. She contended that "It's going to be a war in the Gulf of Mexico," (*Mobile Register*, 13 July 1988), and that shrimpers saw the regulation as an injustice that would destroy their industry.

At a meeting of shrimpers, she announced that shrimpers were happy with Heflin's compromise amendment since it was what shrimpers have been asking for and indicated shrimpers' support for the amendment. Senator Mitchell of Maine, chairman of the Senate environmental protection subcommittee, accepted Heflin's amendment and the Senate passed it on July 25.

At that point an Idaho senator, with support from other western senators, offered two other amendments to allow controlled hunting of wolves and grizzly bears and to make the process of listing new species as endangered more difficult. Since the schedule of the Senate was crowded and there were more pressing matters, the legislation, along with the TEDs amendment, was withdrawn until July 28 when the Senate voted by 93 to 2 to renew the Endangered Species Act, and it is expected to pass the House of Representatives soon.

Differences between House and Senate versions of the bill may not be resolved before the first of September, the date TEDs regulations are supposed to go into effect under the court order from New Orleans. A Texas representative introduced a bill in the House of Representatives to delay the date of the regulations so that the Congress will have time to act on the legislation.

John Fitzgerald of the Defenders of Wildlife said that Senator Heflin's amendment would "cause the death of a number of sea turtles," and suggested that the studies mandated by the amendment will show that they are seriously endangered. Senator Heflin opined that the turtles would be found not to be endangered and that other measures would be more effective than TEDs (*Mobile Register*, 29 July 1988).

Senator Heflin's press secretary told me that while the Senator's stand on

TEDs has won him friends among shrimpers and may have made enemies among environmentalists, the environmental groups have agreed to the compromise amendment so they could offer no political opposition. He suggested that while it is impossible to keep everyone happy, politics is the art of compromise, and that the Heflin amendment is a good compromise for turtles, shrimpers, and environmentalists.

Whether shrimpers must use TEDs depends on a number of complex decisions, many of which are not directed at shrimping or the conservation of turtles. It depends on court decisions, on the strength of opposition from states, on the power of environmental groups, on election year politics, on local politics, and many other dimensions.

The Context of Opposition

The response of shrimpers to TEDs is not unique. Rather, it is to be expected as an economic issue is transformed into a political one in conditions of hardship. Given the difficult conditions, the issue takes on an additional symbolic load, and in a binary rhetoric that links together science, progressiveness, and purity on the one hand against folklore, conservatism, and pollution on the other, the regulators and their supporters the environmentalists become 'bad guys.' As shrimpers escalate their rhetoric, and environmentalists escalate their threats on behalf of the turtles, there is further alienation, and each side backs farther into its corner of its own purity against the danger of the other and mutual understanding, even toleration, becomes less and less plausible.

There are many historic parallels, but the Cow War of Iowa in 1931 is a good example of a similar process. Milk from tubercular cows was spreading the disease. Public health and agricultural officials instituted a policy of herd testing and elimination of diseased animals. This benefited farmers by improving the productivity of their dairy herds, and it was a good public health measure, and farmers were indemnified for any cattle they lost. At first there was no opposition, but as the economic depression widened and more farmers lost their lands to banks, the opposition grew in the form of letters, pleas from organizations, calls for legislative relief, marches on the state capital, court cases, all familiar in the TEDs case, to resistance and finally the program was completed under martial law. This was in Iowa, a state noted then as now for its law abiding, honest, and hardworking politicians and people.

Analysis of the farming household economies shows that dairy money was necessary to keep farm families going from day to day. When their herds were threatened, their daily income was threatened. This did not matter if they had an annual income from their farms, but in the depression they were like shrimpers who cannot get enough shrimp to pay for crew and fuel. The farms could not survive the period between condemnation of their herds and their indemnification without daily income. Thus they resisted and sought relief from courts and the legislature. When these measures failed, they became militant (Durrenberger 1987).

Their militance was not a consequence of any militant ideology, but of their household situations and the general economic conditions. Shrimpers are now facing similar conditions with relatively few shrimp, a shaky price structure threatened on all sides by imports, and low prices. About seventy percent of shrimp consumed in America is imported. A sea-grant marine resources specialist summed it up: "They [coast shrimpers] are getting fewer shrimp, with lower prices and higher operating costs" (*Mobile Register*, 17 June 1988).

According to a local processor, given the low prices and other considerations, banks are loath to advance loans to shrimpers or processors, because the last thing a bank wants is a shrimp boat. Troubled boat owners approach processors and suppliers for help. This adds a burden to processors, who are in their second year of facing competition from low priced imports. It is increasingly difficult for processors to make money when imports sell for considerably less than local shrimp. Again one hears the echo of farmers who argue they cannot sell their crops for less than the cost of production. Not only are imported shrimp cheaper than local shrimp, they are often more attractive. Chinese shrimp are not just crammed into cartons, but hand packed, tails all in the same direction.

Miller and Van Maanen (1979) described the response of Gloucester (Massachusetts) fishermen to newly introduced regulations. In 1977 they opposed the restrictions of various management schemes. There were significant distinctions between new and less recent immigrants, gear types, boat sizes. Miller and Van Maanen conclude that because management policies ignored local social and occupational distinctions among fishermen, the fishermen viewed them as unwelcomed intrusions. Many fishermen saw them as irrational, implausible, impractical, unjust, and unenforceable, and violated the regulations.

Kafka (1984) documents the regulation of the bluefin tuna fishery on Prince Edward Island (Canada) and shows that the determinations of the policies have not taken account of fishermen's interest and have sometimes been quite removed from issues of the fishery itself. The discrepancy in incomes of licensed fishermen and those who were excluded created economic and social divisions among fishermen and there was widespread violation of regulations and laws. The policy was changed because a minister decided to change it over lunch. Subsequent meetings with fishermen were less to allow them to participate in planning than to allow the federal government to inform them of the new policy of wider access.

Davis says that in Nova Scotia:

... to the small boat fishermen, many fisheries policies and regulations appear to threaten their way of fishing and insult their understanding of specific fisheries. The content of fisheries policies, as well as the methods of implementation, imply that decision makers in DFO (Department of Fisheries and Oceans) regard small boat fishermen as short-sighted, if not basically self-centered and ignorant (1984:134).

These and other studies (Lamson 1984, Barrett 1984, Kearney 1984) suggest the importance of variation among fishing operations from large vertically integrated firms to household economies that rely on fishing for part of their annual

income, the differences between large and small economic units and their organizations and motives. This comparative evidence suggests that one of the most pressing needs of fisheries social science research on the Gulf of Mexico is to determine the range of this variation; the types, scales, organization, and motives of economic units; the social, political, and economic dynamics of each; and how each responds to various policies.

Conclusions

This case is complex as it involves state and federal levels of administration and legislation, as well as judicial review. First the Endangered Species Act was passed, a legislative act. Then various sea turtles were classified as coming under the purview of the act, an administrative act. NMFS was given the responsibility for protecting the turtles as an executive agency whose function it is to carry out legislation. Private groups threatened NMFS with lawsuits if they did not require the use of TEDs. After token negotiations, NMFS promulgated a TEDs policy under this threat of judicial action. Legislators attempted to change the law. One attempt failed. Another succeeded. A court stayed the enforcement of the administrative orders at the behest of a state agency and another court upheld the rules.

Three sources of law are apparent: legislation, administrative practice, and judicial review. In the legislative process, legislators at the state legislature, the U.S. House of Representatives or U.S. Senate, represent what they see to be the interests of their constituents in a process that is recognized as intensely political. Given conflicting interests among their constituents, they must make some judgment about which interests to favor in their attempts to shape legislation. Senator Heflin and Representative Callahan of Alabama and other Gulf States legislators have represented the desires of Alabama shrimpers against the desires of various environmental groups. The compromise amendment is supposed to satisfy both groups. Individuals with common interests can band together into special interest groups and advance their interests to legislators and attempt to gain legislative power for their points of view by any number of means or appeals to legislators.

The formulation of administrative procedures is similar whether it be at the level of city councils, the state, or the Federal Government. The administrative process does not represent interests in the same way, but is conceived of as a technical process. The administrators see some problem that requires regulation. They call on experts, scientists, and technicians to define the issues and propose regulatory measures. The regulations are formulated in a technical, rather than an explicitly political, context. After the regulations are formulated, then the affected public are invited to comment directly on the issue, to represent their own interests to the policy makers. As with fishery regulations from NMFS, the proposed regulations are, by definition, by law, formulated in terms of the best available scientific data.

The third source of law is the courts, which have several functions. One is to

insure that proper procedure is followed. Another is to interpret such matters as areas of jurisdiction.

In each of the three processes, the rhetoric of scientific analysis is highly valued. Shrimpers have reported their experience but this does not have the impact of scientific findings, with the imprimatur of a University, a research facility, and a Ph.D. researcher. Shrimpers recognize this problem explicitly and, according to Patti (1987), are willing to spend money to rectify it.

Patti (1987) points to some of the reasons that fishermen are under-represented in the rules-making process and Smith (1988) tells the same story: fishermen fish for a living. They do not make a living by going to meetings. Smith reports that when a New England skipper thought it necessary to attend New England Regional Fisheries Management Council meetings "his crew grumbled at the lost fishing days, his wife nagged about decreased household monies, and the buyer to whom he regularly sold, complained about short landings" (1988:36).

Given that the management process rests on scientific rhetoric, and that of all participants in this process, the fishermen have least access to scientific work and personnel, they are confined to "degrees of tokenism" or "non participation" in their level of participation as Kafka (1984) calls such relationships in Canada.

One of the reasons shrimpers are less than eager to sacrifice any part of their catch is that the price of shrimp is low. One of the reasons the landing price of shrimp is low is the United States' economic and foreign policy on imports. To make up for lower prices, shrimpers attempt to catch more rather than fewer shrimp. Thus, the TEDs exaggerate what shrimpers see to be an already bad situation, itself largely caused by matters of policy that are not directed at shrimpers or the fishery but have negative consequences for them.

Though this case seems resolved for the time being, for the next year, at least, nothing has been settled. More studies will be done. Comments of environmentalists and supporters of shrimpers already show that the results will be controversial. If they show that the turtles are not endangered, the environmentalists will challenge the studies as unscientific and flawed. If they show that TEDs result in little or no loss of shrimp to shrimpers or that turtles are endangered and only TEDs can save them, shrimpers will say the studies are contrary to their experience and common sense. In a year's time, TEDs will once again be in dispute.

Acknowledgements

Work on this paper was supported by the Graduate College of the University of South Alabama, Mobile, Alabama, Brad Davis, Dean, and the Coastal Research and Development Institute, Robert Shipp, Director. I thank them.

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Announcement

International Scientific Symposium

Research and Small-Scale Fisheries

Montpellier (France), July 3-7, 1989.

Organized by:

ORSTOM (Institut Français de Recherche Scientifique pour le Développement en Coopération) and IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer).

Presentation

Taking into account the importance, in terms of biology, economics, social and legal aspects, of small-scale fisheries in the world, the aim of this symposium is to create an opportunity for research workers from various disciplines and origins to assess collectively the present state, the compulsions and perspectives of research. This symposium will deal with the relevance, the possibilities for a generalization of problems and of the methods used, from a scientific point of view. Whereas, so far, scientific conferences dealing with small-scale fisheries tended to take as an objective the improvement of the management and the development of fishing activities, this symposium intends to deal with research problems, instead of analyzing the constraints linked with the development of fishing activities, thus presenting an opportunity for a methodological reflection. This reflection will be centered on the various questions raised by each discipline: heterogeneity, variability . . . or on questions all disciplines are now being confronted with, such as interventions in the field of fishing activities.

Themes

1. *The Present State of Research and Identification of Questions*

Papers presenting the present state and development of research in different regions of the world. The papers will be supported by multi-disciplinary bibliographies.

2. *Research and the Structure of Small-Scale Fisheries*

- research and variety of environments, resources, modes of exploitation, and economical, social and cultural contexts
- relationships between the various components of artisanal fishery system: fishermen and resources, capital and labour, production and marketing.

3. *Research and Dynamics of Artisanal Fisheries*

- adaptation to natural variability, to market variability (investment dynamics, employment)
- resources/fishing fleets dynamics
- competition and complementarities: small-scale/large-scale fisheries; small-

- scale fisheries/on land activities; local market/export market
- knowledge of markets and technology by the economic actors.
4. *Research and Interventions*
- entry into the fisheries
 - means and ways of settling conflicts
 - organization and role of credit
 - customary laws, national administration and international organizations
 - unwanted or unexpected effects of interventions for development.
5. *Prospects of Research*
- research priorities
 - multidisciplinary research and problem solving
 - research in its environment: professionals, administration and financing institutions.

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3. Limit articles to 10,000 words, maximum, and include a 150-word summary.
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5. Use author-date references (Byron 1980:228-31; Taylor 1983; Löfgren 1979), and list all works cited alphabetically by author:

Byron, R.

- 1980 Skippers and Strategies: Leadership and Innovation in Shetland Fishing Crews. *Human Organization* 39(3):227-32.

Löfgren, O.

- 1979 Marine Ecotypes in Preindustrial Sweden: A Comparative Discussion of Swedish Peasant Fishermen. In: R. Andersen (Ed.), *North Atlantic Maritime Cultures. Anthropological Essays on Changing Adaptations*. The Hague: Mouton. Pp. 83-109.

Taylor, Lawrence J.

- 1983 *Dutchmen on the Bay. The Ethnohistory of a Contractual Community*. Philadelphia: University of Pennsylvania Press.

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