

# Levels and Profiles of Job Satisfaction Among Former and Current Distant Water Fishers in Nova Scotia

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**ABSTRACT** In the distant water fishery both job setting and work schedule are distinct from those of typical industrial occupations. Nevertheless corporate managers of distant water fishing enterprises attempt to impose a "scientific" management model on this occupation. This change in management style has greatly influenced working conditions on distant water vessels. In this article we compare levels and profiles of job satisfaction of former fishers ("leavers") with those workers now employed ("stayers") in the distant water fishery. Both the "stayers" and the "leavers" uniformly value monetary rewards and non-monetary benefits relating to the job setting itself - being out on the water, healthfulness, working outdoors, and the company of fellow workers. The grueling work schedule, the long hours away from home, and the loss of autonomy, all characteristics of a more "scientific" management system, are common sources of dissatisfaction among "leavers."

## Introduction<sup>1</sup>

Three key undesirable features of work for distant water fishers are health and safety hazards (Horbulewicz 1972; Poggie 1980), high stress (Horbulewicz 1972) and extended separation from home (Horbulewicz 1972). It is increasingly difficult to recruit and retain fishers<sup>2</sup> in the distant water sector of the Nova Scotian fishery (Binkley 1989). These characteristics may underlie this difficulty.

Yet in very fundamental ways, these explanations are incomplete and unsatisfying. They mask how corporate management in the fisheries has attempted to impose a work regimen that in itself increases safety risks, stress and job dissatisfaction. They fail to stress that these factors are themselves the product of human agency. The size of enterprise allocation, the fluctuation of market demands, the needs of the fish processing plants and the introduction of new fishing technology all conspire to introduce discordant rhythms into the pace and lives of the fishers themselves.

In our study, there is a high accident and injury rate: over seventy-five per cent of those workers interviewed left the fishery because of accidents and injuries. Our starting assumption is that accidents are not randomly distributed. Their rates are predictable. Stress and fatigue, for example will increase accident rates. Control over the work process and worker satisfaction with a variety of aspects of fishing will decrease it. The perception of the nature of the rewards for work influences the attitudes of people to their work. These rewards include both

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monetary and non-monetary benefits. There is an inherent trade-off between these two types of benefits. Previous research (Anderson 1980; Smith 1981; Thiessen and Davis 1988) documents that fishing traditionally has been an occupation pursued particularly for its non-monetary rewards - attachment to fellow workers and community, a sense of personal control, the opportunity to work outdoors, and being on the water. The erosion of these non-monetary rewards leads to lower job satisfaction especially when monetary rewards do not compensate for their loss (Binkley 1990; Thiessen and Davis 1988). These findings suggest that attitudes toward working conditions is a fruitful starting point for exploring the question - "What are the underlying factors that contribute to a fisher's decision to leave or to stay in the distant water fishery?"

In this article, we contrast the perceptions of and attitudes to working conditions of two groups of distant water fishers. The first group, whom we call "stayers" are fishers now involved in the distant water fishery. The second group, whom we will call "leavers," are persons who have left the distant water fishery sometime during the last five years. These people still live in Nova Scotia but now work in other economic pursuits; some work in other fisheries either as fishers or plant workers; some work in other industries; still others collect social assistance (i.e., workers compensation, unemployment insurance, welfare).

Our aim is to examine two main topics: the level of job satisfaction associated with different aspects of distant water fishing, and the profiles of job satisfaction among various sub-groups of "stayers" and "leavers." We begin by describing the Nova Scotia distant water fishery. We then describe the data and the concepts used in this study. Next, we present the findings on the levels and profiles of job satisfaction. We conclude with a discussion of the implications of these findings.

## A Brief History of the Nova Scotia Fishery

Before World War II, the Nova Scotian fisheries, like all of the Atlantic Canada fisheries primarily consisted of a coastal small boat fishery and a distant water schooner fleet. In both types of fisheries, most boats fished out of the harbours where their crews lived. In line with the recommendations of a 1920s Royal Commission report on the fisheries, the federal government of the day severely restricted the development of the domestic distant water trawler fleet. Following World War II government opinion changed dramatically to favour an industrialized and technologically advanced trawler fleet. This signalled the demise of the obsolete schooner fleet, the rapid expansion of a distant water fleet, and the beginning of additional difficulties for the coastal fleet.

By the early 1970s the prevailing view in public policy divided the fisheries into two categories: one economic and the other social. The economic fishery was seen as the distant water fishery and the social as the coastal one. In one sense this viewpoint was correct: the income derived from coastal fishing was hardly sufficient for survival, whereas the income earned in distant water fishing ranged from modest to lucrative, depending on boat ownership, crew-captain

status (Davis and Thiessen 1986) and fortunate markets. These economic advantages exacted a price. First was lessened job satisfaction. With almost all aspects of their job, distant water fishers were less satisfied than their coastal counterparts (Apostle et al. 1985; Thiessen and Davis 1987; Binkley 1987). In addition, community solidarity was weakened. In the coastal fisheries, fishers came from the local communities and continued to fish out of local harbours. This produced a strong sense of community attachment; reciprocally, the community provided social supports to the fishing households. The necessities of distant water fishing substantially weakened these ties. Vessels sailed from fewer harbours and the crews came from farther and farther afield. The discovery of off-shore oil and the establishment of nearby industrial plants such as Michelin Tire in the 1970s reinforced this trend. Both of these developments siphoned recruits away from the distant water fishery, creating a scarcity of crew members. Companies had to increase recruitment from more distant villages and from Newfoundland.

### Craft or Industrial Enterprises

Nova Scotian distant water fishers can be separated into two groups based on the levels of capitalization of the enterprise they work in. We defined these groups as:

- 1) Craft: those who work for an independent owner/operator or a small company based in a specific community which employs persons from that community, and who do not belong to a union; and
- 2) Industrial: those who work for a medium to large size company based in a specific community which usually employs persons from many different communities, and who are usually union members. These enterprises may be vertically integrated companies and may be located in different communities.

Craft and industrial enterprises have structural similarities. Both types are capital intensive. They use similar gear and technology to catch fish. They draw upon the same work force to run their vessels. They differ importantly in the organization of and relations to work. The crucial difference is control of the means of production, which determines the management of the enterprise and the level of bureaucratization (cf. Clegg and Dunkley 1980; Pfeffer 1981).

Work organization profoundly influences the structure of the fishing enterprise. Norr and Norr characterized the organization typical of a fisher-controlled (craft) enterprise (1978:169). Such enterprises recruit for skill and compatibility.<sup>3</sup> They emphasize achievement. They de-emphasize formal authority distinctions, lack administrators, and they consult across status levels. Hierarchy is absent. They encourage teamwork and equity, with the crew taking part in decision making. The Nova Scotian craft fishery shares all of these characteristics.

The organization of the craft enterprise is personal. Nor is this necessarily a family-based fishery.<sup>4</sup> The operator-owner directly controls the enterprise and relies on community members without any outside intermediaries. Crews form

and dissolve by informal agreement. Each member has a personal set of obligations to the captain and other crew members. In return the worker receives an agreed upon portion of the catch. This is the share system. The underlying premise in this system is that all participants take risks in the voyage, and all reap the profits of the venture. (The traditional term was co-adventure.) After the owner-operator has deducted the expenses of the trip and of the boat, including such costs as mortgage and loan payments, each person receives a predefined share of the net proceeds.

The work schedule of these vessels is sensitive to a variety of imperatives: individual, family, economic, weather, which reflect resource and community rhythms and schedules. Decisions on these vessels result from discussion among the crew members, with the skipper making the final decision. The crew works in common to process the fish and to do other tasks. Usually there is no rigid schedule of off- and on-shifts. The quantity and quality of the fish caught determines the rhythm of work. With this flexible work schedule, workers can be in phase with community rhythms and family schedules. They can participate in community activities. Their work with other members from the community strengthens local ties and commitments. This mode of work organization strengthens the social bonds among these workers by giving them a strong sense of identity. It promotes integration of crew members of the same community. It promotes group solidarity through common experiences, goals and shared values. It gives workers a sense of personal control of their working conditions.

Workers in the craft based fishery assume that its security and its future are not assured. Traditional values are strong and closely tied to job satisfaction: trip times, personal responsibility, small tightly knit crews, challenge, freedom to choose, "high" earnings for the region. Rising costs of vessels and gear, and falling quotas because of exhaustion of stocks, increased efforts of vessels from other sectors of the distant water fleet, and greater harvesting capacity all indicate economic uncertainties ahead. These pressures threaten safety, economic well being, and the values of the fishery.

The industrial enterprise is substantively different. Corporate management practices permeate these enterprises. This includes recruitment practices, the character and pace of work, the sense of personal control, the method of payment and the integration of workers into their home community. This system of management takes forms which allow the managers, who are not present on the vessels, to control and manage the company (Chandler 1977).

The industrial enterprises emphasize formal training, credentials and hierarchy. Authority distinctions are formalized with little consultation across status levels. The crew is not involved in decision making. They encourage teamwork and specialization in particular jobs among the crew. These fishing companies hire workers for particular positions and specific skills rather than for their general characteristics. Hiring procedures are based on positions with pre-existing structures and descriptions. Management officials at the company's home port recruit and screen workers. They choose crews from a list of available workers based on qualifications, training and sea rotation, and not personal prefer-

ence. Although captains (called "Masters") of vessels have the final say on who crews for them, this prerogative serves more as a veto of workers than as a positive choice of crew.<sup>5</sup>

Most of these workers are members of unions (i.e., Canadian Brotherhood of Railway Transport and General Workers, United Fishermen and Allied Commercial Workers, Canadian Fishermen and Allied Workers). They have collective agreements with the companies which define the duties, job status and pay of workers. Earnings are negotiated through the collective agreement or contract. Incomes reflect both a worker's position in the hierarchy and the quality of fish caught. They are usually a combination of wages/salaries and bonuses.

The needs of the company dictate the schedule of the vessel. Persons working on the industrial enterprises have little control over their schedules. Work shifts on board are structured and rigidly defined, usually six hours on and six hours off. This schedule continues uninterrupted throughout the trip except when the fish are heavy. Then the crew work through their off-shift, sometimes for as long as eighteen hours.

This type of work organization reduces the workers' sense of personal control. It does little to promote solidarity among crew members. Many crew members in this setting feel isolated from the decision making process, and alienated from the officers and captain of the vessel and the management of the company. Workers spend most of their time off "recovering" from the work shift. They have little time to become involved with their children, sports, or school and church groups. This lack of participation reduces community solidarity and alters the nature of community life. There is little time to develop relationships with spouse, children, or other family members and friends, or to develop social and recreational interests. This stress can surface as drug and alcohol abuse, family breakdown, and child or spousal abuse.<sup>6</sup>

The Nova Scotia distant water fishery is rapidly industrializing. The fleet includes trawlers and scallop draggers over 65 feet, but most of the vessels are 100 feet and over. All vessels have corporate ownership. Even the nominally "owner-operator" vessels have corporate money invested in them. Most companies are vertically integrated. Three are international. Most operate year round. The average trip is ten to fourteen days at sea followed by forty-eight hours shore leave.<sup>7</sup>

### Current Workers Sample

In 1986, 334 captains, officers and crew were surveyed. Jobs were divided into three categories; captain/mate, other officers, and crew. The "captain/mate" category also included substitute mates or captains. The "other officers" category included first and second engineers, bosuns, cooks, and substitutes for these jobs. The "crew" category includes trawlermen, deckhands, dicers, winchmen, and learners. All were full-time fishers. For over eighty-one per cent, fishing provided the sole family income. Captains and officers had substantially higher incomes than other crew members.

Eighty-four per cent of the workers were married (including common-law),

while eleven per cent were single, and five per cent were separated, divorced or widowed. The average age was thirty-three years. The average level of education was just under nine years of schooling. Although captains and officers were only slightly better educated than other crew members, they were significantly older than the rest of the crew.

### Former Workers Sample

Our sample consists of ninety-two workers (all English speakers). They had worked full-time for at least one year in the distant water fishery, and they had left this fishery during the last five years. Of these fishers, three out of four left because of an accident or injury. The remainder left for other reasons ranging from illness to economic incentives in the other fisheries.<sup>8</sup> While working the distant water, thirty per cent of the sample had been either an officer or a captain: seventy per cent had been a crew member. The majority of crew members (73 per cent) left because of injuries, while captains and officers left mainly for economic reasons.

Seventy-six per cent of the workers were married (including common law) while ten per cent were single, and fourteen per cent were divorced, separated or widowed. The average age was forty years. The average level of schooling was just under eight years. The captains and officers were older. The average captain/officer was forty-seven years old whereas the average crew member was ten years younger. The level of education for both groups was the same.

In Table 1 we summarize selected demographic characteristics of the two samples. The variation in the mean age and the age distribution of these samples is substantial. The distant water is a young man's fishery. Most workers say they entered the fishery straight from school. As one informant said, "If you aren't out by forty-five, you should be." Therefore the nature of the fishery is reflected in the samples age distribution.

### Measures of Job Satisfaction

Earlier studies on job satisfaction of North Atlantic fishers, used a battery of job satisfaction questions. In this study, the twenty-six job satisfaction questions used for both surveys replicated the twenty-two items used by Poggie and Pollnac (1978), Pollnac and Poggie (1979), and the twenty-six items employed by Apostle and co-workers (1985). Gatewood and McCay (1988) also used these items. Response categories ranged from (1) to (5), with higher scores representing greater satisfaction.

Because of the large number of job satisfaction items, previous researchers have used two approaches to reduce the complexity of the findings. First, they have used factor analysis (Apostle et al. 1985; Binkley 1990; Poggie and Pollnac 1978; Pollnac and Poggie 1979). Although the results are not entirely consistent, they do suggest several stable dimensions such as "control," "earnings," and "work quality." We will at times use this approach to summarize various patterns that emerge.

Table 1. Comparison of Demographic Characteristics of Distant Water Fishers by Turnover Status

Demographic Characteristics	Current Workers	Former Workers
Mean Age (in years)	33	40
% under 40	60	25
% between 40 & 50	30	25
% 50 and over	10	50
Marital Status (in percentage)		
Married	84	76
Single	11	10
Divorced/Separated	5	14
Education (in years)	9	8

A second approach is to impose a theoretically-informed classification on the various items. For example, Gatewood and McCay (1988) and Binkley (1990) organize their job satisfaction items according to Maslow's (1954) "hierarchy of needs."

We will introduce a third technique, Q-correlations, to summarize patterns. In this approach, the "cases" are the twenty-six job satisfaction items and the "variables" are combinations of occupational position and turnover status.<sup>9</sup> This technique will permit us to assess the similarity/difference of job satisfaction profiles of various sub-groups of "stayers" and "leavers."

### The Data in Context

In comparing the job satisfaction of fishers now employed in the distant water with those who have left, several considerations must be kept in mind. First, those who have left the distant water are recalling how satisfied they were with various aspects of distant water fishing. Their recollections are likely to be coloured by the features of their current situation: presently employed, unemployed or disabled.<sup>10</sup> In other words, their present situations act as anchoring points for their reconstruction of job satisfaction at their former jobs. If, for example, the level of autonomy is now greater, they will express less satisfaction with this component when evaluating their distant water experience. Therefore we must exercise caution in making any causal inferences. If those who left express greater dissatisfaction with certain aspects of their distant water job than those still fishing in that sector, this cannot be assumed to be a reason or cause for leaving distant water fishing. It may signify nothing more than a reconstruction of the past in comparison with the present.

To emphasize the problematic nature of recall data, we postulate that former fishers will evaluate their distant water experience less positively than current workers. Such a proposition has the merit of being congruent with expectations from social psychological theories such as cognitive dissonance, balance, and self-perception theory (Bem 1972; Festinger 1957; Taylor 1970).

Second, distinctly different working conditions characterize the different occupational positions of captains/mates, other officers and crew members (Gatewood and McCay 1988). Each of these jobs has a specific status in the social pyramid. The Captain is at the top of the social pyramid. Officers (Mate, Engineers, Bosun, and Cook) are in the middle. The crew (Trawlermen, Deckhands, and Learners) are at the bottom. There is a basic social cleavage between officers and crew. Work is divided into jobs with defined activities and positions in the social pyramid. These differences are sufficiently great that patterns of job satisfaction need to be explored separately for each of these positions.

Third, in view of the issue of comparison levels, it is important to provide a description of the current life situations of former distant water workers. All of the former captains/mates are still fishing, many as independent owner-operators of smaller vessels. Most of the former officers are also still fishing. Many do not have sufficient capital or access to licences to become independent owner-operators. Thus they are now crewing for these small enterprises. Crewmen who have left the distant water are now in a variety of situations. Many are working in land-based occupations, such as tire plants; some work in other fisheries; others are collecting workmen's compensation or unemployment insurance benefits.

### The Findings

Table 2 compares the mean levels of job satisfaction of current with former distant water fishers. As expected, current distant water fishers express more satisfaction with many aspects of their work than do former distant water fishers.

Since previous research shows that occupational status influences the working conditions and consequent job satisfaction (Gatewood and McCay 1988), we will examine each of the occupational positions separately. The first two columns of Table 2 provide the mean level of satisfaction reported by current and former captains/mates. The patterns here are straightforward. First, all statistically significant differences are in the expected direction - former captains and mates express less satisfaction than current ones. On ten components, such differences are statistically significant. Former captains/mates describe distant water fishing as particularly stressful, with significant differences on "job safety," "physical fatigue," "mental pressures," "peace of mind" and "trip length." They also recall limited autonomy, scoring lower on "ability to come and go as you please" and "opportunity to be your own boss." Finally, they are less satisfied with "doing deck work on vessel" and "regular income."

Researchers consider the forced absence from family and friends required by distant water fishing to be the most important difficulty with the occupation.

Table 2. Mean Job Satisfaction of Current and Former Distant Water Fishers by Occupational Position

Job Satisfaction Component	Captains/ Mates		Other Officers		Crewmen	
	Stayed	Left	Stayed	Left	Stayed	Left
Physical fatigue	3.92 <sup>c</sup>	3.00	3.82	3.29	3.67 <sup>a</sup>	3.00
Fellow workers	4.46	4.45	4.34	4.64	4.34	4.46
Mental pressures	3.70 <sup>c</sup>	2.82	3.88	3.43	3.87 <sup>a</sup>	3.07
Healthfulness	4.41	4.09	4.34	4.29	4.14	3.80
Crowding	4.59	4.27	4.47	4.46	4.43 <sup>a</sup>	3.77
Challenge	4.57	4.55	4.13	3.93	4.21 <sup>c</sup>	3.81
Regular income	4.07 <sup>c</sup>	3.27	3.88	3.73	3.59	3.33
Hours spent working	4.20 <sup>a</sup>	2.91	4.24	4.00	4.07 <sup>a</sup>	3.29
Community in which you live	4.56	4.71	4.52	4.40	4.49	4.54
Time for family activities and recreation	3.51	3.13	3.03	2.58	2.82	2.71
Doing deck work on vessel	4.24 <sup>c</sup>	3.55	3.83	3.69	4.29	4.09
Performance of federal and provincial officials	2.40	2.40	2.58 <sup>c</sup>	3.07	2.40	2.82
Time it takes to get to the fishing grounds	3.91	3.27	4.01	3.75	4.02 <sup>b</sup>	3.52
Adventure	4.37	3.91	3.45 <sup>a</sup>	4.42	4.00 <sup>c</sup>	3.63
Your earnings	4.20	3.82	3.84	3.67	3.63	3.64
Being out on the water	4.40	4.36	4.06	4.40	4.18	4.30
Ability to come and go as you please	4.38 <sup>b</sup>	3.36	4.34	4.00	3.80	3.47
Job safety	4.39 <sup>c</sup>	3.00	4.12 <sup>c</sup>	3.13	4.01 <sup>a</sup>	2.55
Living conditions on board	4.46	4.00	4.16 <sup>b</sup>	4.71	4.09	3.88
Time away from home	3.39 <sup>b</sup>	2.09	3.25	2.50	2.95	2.68
Opportunity to be your own boss	4.52	3.55	4.23 <sup>c</sup>	3.50	3.71 <sup>a</sup>	3.02
Peace of mind	4.20 <sup>c</sup>	3.30	3.85 <sup>c</sup>	2.93	3.90 <sup>a</sup>	3.20
Feeling you are doing something worthwhile	4.51	4.09	4.34	4.27	4.18 <sup>a</sup>	3.56
Cleanliness	4.35	4.09	4.09 <sup>a</sup>	4.79	3.89	3.68
Working outdoors	4.65	4.82	4.38	4.33	4.67	4.63
Trip length	4.21 <sup>c</sup>	3.50	4.07	3.57	3.86 <sup>c</sup>	3.45
Minimum N	99	11	67	14	156	51

<sup>a</sup>  $p < .001$ .

<sup>b</sup>  $p < .01$ .

<sup>c</sup>  $p < .05$ .

Our findings support this view in that "time away from home" and "hours spent working" receive the lowest ratings among "leavers," with mean scores less than the neutral point of 3.0. In addition, both "time away from home" and "hours spent working" are significantly lower among former than current distant water workers.

Equally illuminating are those job satisfaction components that do not differentiate between "stayers" and "leavers." First, community and crew attachment is strong for both groups. The job satisfaction scores with "fellow workers" and "community in which you live" are as high for the "leavers" as for the "stayers." Second, both current and former distant water fishers are highly satisfied with the environmental aspect - "working outdoors" and "being out on the water." Third, satisfaction with both the general "living conditions on board" and the specific "cleanliness" is about the same for the "stayers" and "leavers."

In contrast to the captains and mates, job satisfaction of current and former other officers is more complex. For this occupational position, there are seven statistically significant differences, but on four of these former officers report greater satisfaction than current ones. Former officers recall greater satisfaction with the general "living conditions on board" and specifically with "cleanliness." They seem to miss the "adventure" of their former jobs, recalling greater satisfaction with this than current officers. Finally, on the issue of "the performance of federal and provincial officials," the "leavers" recall less dissatisfaction than the "stayers."

The final two columns of Table 2 contrast current and former crew members. On twelve components, former crew members recount significantly less satisfaction than their current counterparts. As with the captains, there are no issues on which former crew members recall significantly greater satisfaction than current crew members. Satisfaction with the physical and mental demands of distant water (i.e., "physical fatigue," "crowding," "hours spent working," "job safety," "trip length," "time it takes to get to the fishing grounds," "mental pressure" and "peace of mind") fishing clearly differentiates "stayers" from "leavers." In addition, current crewmen value more the "challenge," sense of "adventure" and "feeling you are doing something worthwhile" than former crewmen do.

A close examination of Table 2 suggests that there are some common components of the work environment that differentiate "stayers" from "leavers" irrespective of their occupational position. These appear to be stress, both physical and mental, the time demands of the job, the health and safety hazards of distant water fishing, and the limited independence in the distant water sector. To explore this more systematically, we constructed indices to measure these aspects of job satisfaction (see Table 3).<sup>11</sup>

On the first four factors listed in Table 3, "leavers" report significantly less satisfaction than "stayers." This is true not only for the sample as a whole, but also for each of the three categories of occupational status. This consistency suggests a common dynamic which link features of the work environment to the termination of distant water fishing. We suggest that the fishing schedule of long trips with forced absence from social familiars interacts with the limited control distant water fishers exercise on these schedules and on their routines to create high stress levels, such as mental pressures and physical fatigue. Under conditions of high stress, accidents occur more often, forcing some fishers out of the

Table 3. Mean Levels of Job Satisfaction Among Former and Current Distant Water Fishers

Job Satisfaction Index	Component Items	Current Workers	Former Workers
Control	Ability to come and go as you please, Opportunity to be your own boss	4.07 <sup>a</sup>	3.40
Time	Trip length, Time away from home, Time it takes to get to the fishing grounds, Time for family activities and recreation, Hours spent working	3.67 <sup>a</sup>	3.11
Safety/Health	Healthfulness, Job safety	4.21 <sup>a</sup>	3.34
Stress	Peace of mind, Physical fatigue, Mental pressures	3.85 <sup>a</sup>	3.07
Earnings	Your earnings, Regular income	3.82	3.57
Adventure	Challenge, adventure	4.15 <sup>b</sup>	3.86

<sup>a</sup>  $p < .001$ .

<sup>b</sup>  $p < .01$ .

occupation. Not surprisingly, in retrospect these "leavers" express greater health and safety concerns.

On the fifth factor, "earnings," there are no statistically significant differences between "stayers" and "leavers." Former fishers are aware that in economic terms, distant water fishing compares well with available alternatives. Finally, there is a tendency for "leavers" to report less satisfaction with the "adventure" component of distant water fishing. This is the case primarily among crewmen.

In our description of the two samples, we mentioned that former fishers on the average were older than current ones. This raises the possibility that differences in levels of satisfaction are a function of age rather than turnover status. To test this possibility, we computed Pearson's correlations between age and each of the six factors. Age differences do not account for the reported findings.

**Similarities and Differences in Profiles**

We turn now to assess the similarities and differences in the job satisfaction profiles. Our first approach to developing these profiles is to compute the "five worst" and the "five best" aspects of distant water work as reported by "stayers" and "leavers" in each occupational position. This is done in Tables 4A and 4B respectively.

Among current workers, the "performance of federal and provincial officials," "time away from home," and "time for family activities and recreation" are seen as the three worst in each of the occupational positions. Two of these

Table 4A. Items Showing the Least Job Satisfaction by Turnover Status and Occupational Position

	Current Workers	Former Workers
C A P T A I N S / M A T E S	Performance of federal and provincial officials	Time away from home
	Time away from home	Performance of federal and provincial officials
	Time for family activities and recreation	Mental pressures
	Mental pressures	Hours spent working
	Time it takes to get to the fishing grounds	Job safety
O T H E R	Performance of federal and provincial officials	Time away from home
	Time for family activities and recreation	Time for family activities and recreation
	Time away from home	Peace of mind
O F F I C E R S	Adventure	Performance of federal and provincial officials
	Physical fatigue Job safety	
C R E W M E N	Performance of federal and provincial officials	Job safety
	Time for family activities and recreation	Time away from home
	Time away from home	Time for family activities and recreation
	Regular income	Performance of federal and provincial officials

Table 4B. Items Showing the Most Job Satisfaction by Turnover Status and Occupational Position

	Current Workers	Former Workers
C A P. / M A T E	Working outdoors	Working outdoors
	Crowding	Community in which you live
	Challenge	Challenge
	Community in which you live	Fellow workers
	Peace of mind	Being out on the water
O T H E R	Community in which you live	Fellow workers
	Crowding	Crowding
	Working outdoors	Adventure
O F F.	Fellow workers	Community in which you live
	Healthfulness	Working outdoors
C R E W M E N	Working outdoors	Working outdoors
	Community in which you live	Community in which you live
	Crowding	Fellow workers
	Fellow workers	Being out on the water
	Doing deck work on vessel	Doing deck work on vessel

– “time away from home” and “performance of federal and provincial officials” are also among the five worst components for all three groups of “leavers.” As one might expect, “job safety” is among the worst five for all three groups of “leavers” but is not among the worst five for any of the three groups of “stayers.”

Turning to those items that provide the greatest satisfaction, “working outdoors” and “community in which you live” are among the top five in all six groups. In addition, “crowding” is among the five best for all groups of “stayers” whereas “fellow workers” is among the five best for all groups of “leavers.”

In many respects, the working conditions of our distant water sample are similar to those of the workers on scallopers and draggers, and to some extent as well as those of the workers on longliners studied by Gatewood and McCay (1988). The three components of job satisfaction rated lowest among our current

workers (“performance of federal and provincial officials,” “time away from home” and “time for family activities and recreation”) were found to be among the six worst for those fisheries reported by Gatewood and McCay (1988). Likewise, “working outdoors” and “community in which you live” are among the most satisfying items for both our “stayers” and their scalloper and dragger workers. This also corroborates a tendency documented by Apostle and co-workers (1985), that attachment to community and to fellow workers is particularly pronounced among Nova Scotian fishers.

There is only one instance where an item which appeared among the worst five for one group also appeared among the best five for any other group. This is “adventure” which is among the top five for former other officers and among the bottom five for current other officers.

The findings discussed so far suggest that both occupational position and turnover status are associated with job satisfaction profiles. To explore this more systematically, we created six groups by combining turnover status with occupational position (captains/mates, other officers and crew). Q-correlations will be used for this purpose. In such an analysis, the twenty-six components of job satisfaction are the “cases” while the mean job satisfaction scores for the six groups are the “variables.” That is, we computed the Pearson’s correlations on a twenty-six by six matrix where the cell entries are the mean job satisfaction scores on a given component (row) for a given group (column). Such a procedure ignores absolute differences in levels of job satisfaction among the different groups but captures relative differences. It answers the question: “To what extent are those job satisfaction components that one group rates high also rated high by another group; and vice versa, how similar are those that one group rates low?”

Table 5 shows the job satisfaction similarity profiles in the form of Pearson’s correlation coefficients among the six groups.<sup>12</sup> Three patterns emerge:

(1) The profiles of the three groups of current distant water workers are most similar to each other, with all three possible intercorrelations identical at 0.88.

(2) Likewise, the profiles of the three groups of former distant water workers are most similar to each other; these correlations range from 0.80 to 0.88.

(3) In every instance, the profiles of groups with like turnover status but unlike occupational position are more similar than for any groups of like occupational position but unlike turnover status.

## Discussion and Conclusions

As stated previously, former workers left the distant water either because of an accident or because of their dissatisfaction with the balance between monetary and non-monetary benefits. This manifests itself in the different profiles and patterns of levels of job satisfaction between current and former workers. The combination of long working hours, the loss of autonomy while working, the physical and mental stress of the work, and safety concerns are common areas

Table 5. Similarity of Job Satisfaction Profiles among Combinations of Turnover Status and Occupational Position (Pearson's Q-correlations)

		Current Workers			Former Workers		
		(1)	(2)	(3)	(4)	(5)	(6)
C	W						
U	O						
R	R	(1) Captains/Mates	---				
R	K						
E	E	(2) Other Officers	.88	---			
N	R						
T	S	(3) Crewmen	.88	.88	---		
F	W						
O	O	(4) Captains/Mates	.77	.66	.77	---	
R	R						
M	K	(5) Other Officers	.66	.66	.72	.80	---
E	E						
R	R	(6) Crewmen	.61	.58	.75	.87	.80
S							---

of dissatisfaction for all former workers but how these concerns are manifest depends partly on the occupational position of the worker. The link of having left the distant water seems to produce more common concerns than the link of occupational position. That is, the configurations of satisfaction/dissatisfaction among former distant water workers of different occupational positions are more similar to each other than are the configurations of "stayers" and "leavers" who held identical occupational positions.

Most captains said they left because they had become disillusioned with the distant water fishing industry. Captains are now expected to be site managers, as well as fish hunters and navigators. They must take their direction from the onshore managers. Companies now tell captains where to fish, what species to catch, and how much to bring back. Captains who leave see the company's attempt to control the operation at sea as an infringement of their rights as captain.<sup>13</sup> As one captain who had worked the distant water for twenty years put it:

The company I worked for didn't appreciate me ... There should be no boat quota. The fun was taken out of it. There were no highliners. It was just like going shopping at Sobeys [a local food store]. So I just quit.

When these workers leave the distant water they either buy their own vessel or work for a small independent owner. Here the captain enjoys final control over when, where and with whom to fish. The trips are significantly shorter and the time between trips substantially longer. Status distinctions are not emphasized. These vessels are much smaller, with cramped living quarters, smaller work

decks and less safety equipment. With no large company to run interference, captains must deal directly with federal and provincial fisheries officers. Workers trade off these less pleasant working conditions for shorter sea time, increased flexibility in working conditions and increased autonomy.

The other officer group presents a more complicated picture. These fishers have left the fishery because of injury, physical stress or stifled ambition. The majority do not possess sufficient resources to become an owner/operator but they hope to upgrade to mate or captain. They suffer a loss of status. They must now direct fewer workers on a smaller deck or in cramped fishrooms. They must bunk with the rest of the crew. Their higher level of job satisfaction with distant water living conditions and the general physical environment can be traced to their current working environment. These fishers trade off the less pleasant working conditions for shorter sea time, more autonomy and input into their working conditions, and better possibilities of advancement.

The crew members leave the distant water fishery because of an accident or illness. Many face long-term disability, and many will never return to the fishery although they long to. As one injured worker put it:

I had it in my mind all along that I was going back fishing and then the compensation cut me down ... I couldn't live on that. There's no way I could do it. So then they told me to put in for the Canada Pension. So I put in for Canada Pension and thank God I got that ... I wanted to go back to fishing. I had it in my mind I wanted to go back but my report came back from Halifax one hundred per cent disabled from any fishing of heavy lifting. So it hit me hard. It changed my life all over. I didn't know what to do with myself. I even thought about trying to make away with myself.

The distant water is a grueling and stressful environment where good money can be made by workers with low education. Many of the men we interviewed said they knew that they weren't keeping up, but they also knew that their job prospects for similar paying work were low if not non-existent. Therefore they kept on working, trying to maintain the pace. Many felt their accident was inevitable and that it was the only way they could get out of the fishery.

Two features of distant water fishing are at the heart of the patterns of problems examined in this paper. The first is the work schedule which typically consists of ten days at sea and forty-eight hours on shore. This is how one worker describes it:

What I find is you're always trying to catch up - make up for lost time. Trying to live in 48 hours what the guy ashore does in 10 days or 2 weeks. Drink, drive, run around, watch TV, there's no time for sleep. You have to keep going, going all the time.

Such a schedule is too demanding, creating both physical and mental stress. The limits on the allowable deferment of trips exacerbated this situation. It is particularly hard on families. Here is how one fisher's wife expressed it:

With the union they're given certain times home: Boxing Day, New Year's, they used to be gone. Before you had children you'd look forward to New Year's, but they didn't have it, they had nothing. Now they stay home Christmas and New Year's. But other family times, Mary's graduation for example, he had to lose a trip ... First communions, baptisms, all the family things you want to do together, he has to take a trip off ... The contract gives you three trips off. So you take one for graduation and another if someone is ill, come summer when we want to be gone, he's still there. And then it's winter.

The second feature is the loss of worker control over the work processes both on the deck and in the wheelhouse. Increasingly, these decisions are made by management or determined by the technology. The lack of control over the technology used, combined with the demanding work schedule is a dangerous combination that results in high accident rates.

To what extent are these two features intrinsically necessary to maintain an efficient distant water fishing industry? Phrased differently, what produces and maintains these two features? Part of the answer is the vertical integration of distant water fishing companies. In the context of enterprise allocation, companies must integrate harvesting at sea with processing on shore. One component of this strategy is to maintain a strict control of harvesting in order to coordinate it with processing needs. Another part of the strategy involves technological advances in fishing. The rhythm and pace of work is premised less on human capacities than on creating a "conveyer belt" regularity and predictability to which the worker must adapt. Both developments result in an alienation of fishers from their work.

Although the sources of the difficulties are easy to see, the solutions are not. Thus, at first glance it seems clear that the solution to the stress problem is either to decrease the time at sea or to increase the time on shore. Interviews with the fishers make it clear that the problem was not the length of time at sea, but rather the short time on shore. However, they stated categorically that they would be unwilling to take a lower income in order to have longer shore leave. It is unlikely that the companies would be willing to offer the same income for less work.

The solution to the technology problem is equally difficult. Technological developments have made distant water fishing more efficient and profitable. But technological improvements have paid little regard to human limitations. For example, the containerization of fish (boxing) into plastic boxes, that hold approximately seventy or one hundred and ten pounds of fish plus ice, leads to a better quality of fish. But the fishers working in the hold must lift and carry these boxes by walking on the narrow edges of boxes stored in the constantly moving hull. The rate the boxes are filled is not controlled by the men storing the boxes. If troubles ensue, there is no way of halting the process short of shutting down the whole process. But this action produces backlogs in the earlier process of gutting and preparing the fish. This labour-intensive method of storing fish has been associated with increased health risks. Accidents due to lifting (e.g., hernias, back problems), slips and falls (e.g., sprains, strains and fractured limbs), and the tumbling of boxes (e.g., crushed body parts), and illnesses as-

sociated with the cold and damp working environment (e.g., rheumatism, colds) have been attributed to boxing. Clearly, a redesign of some of the technology according to ergonomics is essential and this work is now being done in Scandinavia (H. G. Andersen 1989, personal communication).

The solution to the management problem is the most complex and difficult. Benefits from the introduction of scientific management have included the increased quality of fish, increased safety related to stability of vessels, and the regularization of work schedules, sea time and income. These strategies have had profound results on the organization of work on board vessels. The needs of the men on board are suppressed while the needs of the plants, which are responding to market pressures, are paramount. The enhanced control of the workplace has increased worker's dissatisfaction and continued the exodus of fishers from the work force. Neither companies nor employee groups have fully appreciated or investigated these effects.

In the introduction we asked "What are the underlying factors contributing to fishers decision to leave the fishery?" This question is an intriguing and complicated one. Our study suggests that, for uninjured workers who leave, changes in working conditions associated with scientific management erode job satisfaction and upset the equilibrium between monetary and non-monetary benefits associated with the job. For these workers the long time away from home and family, and the level of stress combined with economic incentives in other sectors of the fishery push them out of the distant water as inevitably as those injured workers are pushed out.

## Notes

1. Marian Binkley supervised the collection of the information used in this paper. The project was supported by The Social Sciences and Humanities Research Council of Canada - No. 410-85-0479 and No. 410-87-0548. An earlier version of this paper was presented at the 1989 annual meetings of the Atlantic Association of Sociology and Anthropology in Sydney, Nova Scotia. The authors would like to thank the Editors of *MAST*, Richard Apostle, and Jack Crowley for their helpful comments.

2. We use the non-sexist term "fisher" to denote people who work in the fishery even though there are no women now working in the distant water fishery.

3. For a fuller treatment of recruitment practices in the community based distant water fishery, see Thiessen and Davis (1988). For a discussion comparing kin based recruitment with contract recruitment, see Stiles (1971). For an ethnographic account of a community based fishery with both inshore and distant water fisheries, see Davis (1985).

4. Brothers may work side by side, but this is not the norm. The nature and physical demands of this type of work, coupled with the social costs of spending long periods at sea, puts too much strain on families (Thiessen and Davis 1986:12-13).

5. An important exception is the First Mate position where Masters may compete openly to hire a particular person.

6. For further discussion concerning family life in distant water fishers' families, see Binkley and Thiessen (1988).

7. For a more comprehensive discussion on the organization of the fishery and working conditions see Binkley (1989).

8. The specific reason for leaving the distant water fisheries could influence the reported levels of job satisfaction. Therefore a series of difference-of-means tests were performed contrasting the job satisfaction of those who left due to illness or accident with those who left for other reasons. Only one statistical difference emerged. Since that is the same number as would be expected by chance (over twenty comparisons were made), this distinction is not retained in the analysis.

9. Turnover status refers to whether a respondent is a former or a current distant water fisher. In other words, this variable simply indicates the sample - "stayers" or "leavers" - of the respondent.

10. This is a general problem in retrospective interviews. Past methodological studies have repeatedly indicated that for most topics recollections are considerably biased. Respondents might be willing to tell a researcher what they thought about something that happened several years ago, but the responses are usually poor reflections of what they actually thought at the time about the topic.

11. Apostle et al. (1985) and Marian Binkley (1990) used factor analysis on these job satisfaction items. There is considerable similarity between their dimensions and our indices. The main difference is that safety/health considerations did not emerge as a factor in their studies; it is clearly an important domain for our topic. Also, in the context of our study, the factor "work quality" is better renamed "stress."

12. It is of course possible to compute these similarity profiles using other measures of association such as Spearman's rank order coefficients. As its name implies, this procedure converts the means into ranks from 1 to 26 for each of the six groups and then correlates the ranks. We, like Bohrnstedt and Borgatta (1985) consider the assumptions made in this "non-parametric" technique to be at least as problematic as the assumptions of normality and interval measures made when computing Pearson's correlation coefficients. In particular, the Spearman's procedure forces a minute difference in two adjacent means to be given the same "weight" as a large difference between another adjacent pairs of means. Since our scores are means, it is reasonable to give more weight to large differences than to small ones. Spearman's correlation coefficients were nevertheless computed with mixed results. That is, the patterns reported in Table 5 for the Pearson's correlations are also manifest when Spearman's r's are computed, but less clearly.

13. For a fuller discussion of the implications of the enterprise allocation and its concomitant management practices on the working conditions in the distant water see Marian Binkley (1989).

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## Policy, Power and Science

The Implementation of Turtle Excluder Device Regulations in the U.S. Gulf of Mexico Shrimp Fishery

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*ABSTRACT* For the past decade shrimpers, environmentalists, sport fishermen, and fisheries administrators have been involved in legislative, legal, and administrative battles over the use of devices to exclude sea turtles from shrimpers' trawl nets to prevent their drowning. In the summer of 1989, the regulations requiring such devices began to be enforced. To protest, shrimpers blockaded several ports along the Texas and Louisiana coast. I describe what appears to be the final implementation of the turtle excluder device (TED) regulations on the Gulf of Mexico. Because it is central to the rhetoric of many policy discussions, I analyze the role "science" and scientists have played in this process.

### The Blockade

On 23 July 1989, a week after shrimping season opened in Texas, angry shrimpers drew their boats into lines to block egress from and access to ship channels at Galveston, Port Arthur, Port Aransas, and Brownsville, Texas, and Cameron, Louisiana. At Aransas Pass, 150 or more shrimp boats overwhelmed the Coast Guard and caught their cutters in the blockade. The Coast Guard attempted to break the blockade by blasting shrimpers with water and cutting their anchor cables. They failed. About 200 other shrimping craft blockaded the Houston and Galveston ship channels. Some surrounded the ferry from Galveston and forced it to stop (*Dallas Morning News*, 23 July 1989).

Sport fishing boats were held inside their ports or not allowed back in. This disrupted weekend fishing competitions and interrupted charter boat operations, depriving them of weekend income and turning some against the shrimpers. While some large offshore oilrig service boats and tenders ran the blockade, other boats were delayed.

Shrimpers would lose between \$2,000 and \$5,000 income every day they kept their boats on the blockade instead of fishing. They could not sacrifice their income for a long time (*Corpus Christi Caller-Times*, 23, 30 July 1989).

Hoping the shrimpers would "take it as a victory of some sort and . . . relax a little," the Coast Guard broadcast the news that Gulf coast congressmen would meet with the secretary of Commerce to negotiate a resolution (*ibid.*, 23 July 1989). The blockade broke up about noon the next day when the Coast Guard promised negotiations would be held. Shrimpers vowed to resume the blockade if negotiations were unsuccessful.

What precipitated this drastic action was the announcement that the Coast