

The SRSF Eastern Shore Nova Scotian Coastal Fisheries Ecosystem Project: A Social Profile of LFA's 29 (Southern Richmond County), 31A and 31B (Guysborough County) Fisheries

A Preliminary Report of Research Results

SRSF Research Report #1

Prepared by

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June, 2001

Introduction

Social Research for Sustainable Fisheries (SRSF) is a partnership linking university researchers and capacity with Mi'kmaq and non-Mi'kmaq fisheries community organisations. Although administered at St. Francis Xavier University, SRSF engages and represents a working collaboration between Guysborough County Inshore Fishermen's Association, the Gulf Nova Scotia Bonafide Fishermen's Association, the Afton First Nation, and St.FX as well as other university-based social researchers. Additional fisheries and community organisations are linked with SRSF through relations with these core partners.

SRSF is funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) through its Community-University Research Alliance (CURA) programme. The basic purposes of SRSF are: to develop fisheries-focused social research linkages between university researchers and community organizations,

to build social research capacity, and to facilitate specific fisheries social research activities that will examine the concerns of the partnered community organizations. Social research capacity, experience and linkages are developed through research-focused workshops and specific research projects. Further information about SRSF is available either through the project's web site (www.stfx.ca/research/srsf) or by contacting any of the SRSF project staff, either at St. FX or the offices of the partner organisations.¹

The membership of SRSF's core partner, the Guysborough County Inshore Fishermen's Association (GCIFA), have expressed their deep concern with the current state of the lobster fishery. Landings have been steadily declining. Yet, the lobster fishery remains a core basis for the region's fisheries livelihoods. Many feel that the economic viability and social sustainability of fisheries livelihoods and communities are being seriously threatened by the recent trends within their lobster fishery. As a result of these conditions, the GCIFA members have expressed their wish to have several issues examined through SRSF that they consider to be important both to identifying reasons for the decline in the lobster fisheries and to assisting in the work of rebuilding the fisheries. The research results reported here represent an initial step toward addressing issues such as changes in the lobster grounds, changes in fishing effort, and experience with Green Crab as an invading foreign species that may be impacting upon lobster recruitment and abundance.

This report presents the preliminary results from the first step of a two step research process. In order to conduct social research that would carefully examine the issues and concerns, SRSF developed an approach to the research that would at first enable all holders of either Class A or Class B lobster licenses within LFA's 29, 31A and 31B (and a few in 32) to provide basic information in areas such as attributes of their fishing history, characteristics of their involvement with the lobster fishery, and a profile of experiences with Green Crab. This research also sought advice from the participants regarding who they considered to be particularly 'in the know' about the local fishing ground. On the basis of this information, SRSF and CRC researchers will be seeking to work with those recommended as most knowledgeable in our efforts to carefully document observed experiences with and changes in local fishing grounds, particularly with respect to the ecological and environmental factors impacting on the location, recruitment and abundance of lobster.

Research Methodology

For this study a list of 211 persons was compiled by the GCIFA CRC of all LFA 29, 31A, 31B, and Guysborough resident 32 holders of either Class A or Class B lobster licenses. Rather than drawing a random sample of license holders, SRSF decided to attempt to invite all of those currently fishing lobster to participate in the study. Considering the geographical spread of license holders, the relatively

short timeline desired for this phase of the research, and the limits on the resources available to support this step, the research group decided to employ a telephone survey approach. To this end several meetings were held in order to develop the questionnaire and to train the group that would be conducting the interviews.² The questionnaire was derived, in large measure, from a survey instrument that had been used for similar purposes two years previously in an interview of a stratified random sample of lobster license holders fishing in the St. George's Bay- Southern Gulf of St. Lawrence area of Northeastern Nova Scotia. The decision to adopt and to adapt this questionnaire was based on the knowledge that developing comparable information would strengthen the potential outcomes from the research. This reasoning also considered the potential importance and usefulness of documenting attributes of and experiences in the lobster fisheries conducted on both sides of the Canso Causeway, essentially a physical barrier constructed across the Strait of Canso for the purpose of providing a permanent road and rail link between Mainland Nova Scotia and Cape Breton Island. There is no doubt that the construction of the Canso Causeway fundamentally altered the oceanographic dynamics and ecological relations within the Strait of Canso and adjacent coastal and ocean areas.

The Richmond County Inshore Fishermen's Association and the Eastern Shore Fishermen's Protective Association were contacted by GCIFA and invited to participate as full partners in this study. After examining the materials and discussing the study's purposes, both of these organisations decided to partner with the research. A contact letter was developed in which the collaborating organisations were described, the general purposes of the study were outlined, and the confidentiality of individual responses was assured. This letter was printed on stationary bearing the names and logos of SRSF and GCIFA, but with the names and affiliations of all participating organisations specified as signatories.³ The letters were mailed out by the GCIFA in three separate and roughly equal sized batches, starting with LFA 29, followed by LFA 31A, and ending with LFA 31B (including a few Guysborough County residents fishing within LFA 32). Beginning on May 3rd, these mailings were spaced by a week to ten days, depending on the anticipated delivery times, the speed at which the interviewers were contacting participants, and the interview completion rates. Ideally license holders were being contacted within seven days of their receipt of the contact letter. Although twelve persons participated in the conduct of interviews, the bulk were completed by the GCIFA CRC, student research assistants, and staff.

Interviewing began on Monday, May 7th and ended on Monday, June 11th. On average the interviews took 20 minutes to complete. Of the 211 license holders, 159 participated in the study, 24 declined to participate, and the interviewers, after at least three attempts, were unable to contact 27 persons.⁴ The overall participation rate is 75.4%, a notably high and encouraging rate given the telephone survey method. While there is some variation in participation rates across LFA's, none were less than 70%.⁵ On the basis of these characteristics we

are confident that the survey results provide an accurate representation of the social and fishery attributes for which information was solicited.

A Profile of Social and Background Characteristics

Of those that participated in the study, over ninety percent identified themselves as fulltime fish harvesters, with over two in every three claiming that they have always fished. Almost ninety-seven percent own their boats, with one in every three participants specifying that they owned two or more boats. Notably, ninety-eight percent of those interviewed claim they feel that they either really belong or belong to the harbour from which they are currently fishing. As might be expected the vast majority currently work and fish from harbours and wharves located within either the actual communities or community areas in which their families are rooted and in which they have grown up. Further illustrating the social richness and depth of the participants' rootedness in and family history with the fisheries and communities is the fact that almost eight-five percent report that their fathers either fished or are currently fishing and that almost eighty percent of their fathers' fathers fished for their living. Indeed, at least one in every two reported that their wives' fathers fish or fished, that their mothers' fathers fished or fish, that their fathers' brothers fish or fished, and that at least one of their brothers fish or fished.

These qualities are shared by most engaged within the Richmond and Guysborough County coastal, small boat fisheries. They describe the people who compose the core and foundation of the community-based, small boat fishery within the region. The study's participants and their families are deeply rooted socially and economically within the fisheries, most describing at least three generations or as much as ninety years of fishing for livelihoods. This information profiles a group of core fish harvesters working within a rich family and community tradition sited within fishing grounds that are immediately adjacent to communities in which they grew up. Certainly, these shared social qualities provide the basis on which local knowledge about fishing ground environmental and ecological relations is built. Years of inter-generational experience fishing more or less within the same localities assures the on-going development and use of knowledge respecting fishing ground attributes such as qualities of habits, seasonal and spatial distributions, and key ecological dynamics. These are among the key characteristics of the social and cultural context at work within coastal fishing communities and livelihoods.

Table 1 presents an overview of selected social and fishing background attributes of those who participated in the study. From this point forward, information will be presented for each LFA, thereby allowing for comparisons of important similarities and differences. Here the mean and median scores for the selected attributes are presented. Mean, or average, scores are often usefully contrasted with median scores. The median score simply identifies the midpoint where there

are an identical number of cases located on either side of this point or score. For instance, in LFA 29 the median of 1948 for Year Born states that among those interviewed as many were born in 1948 and earlier as were born in 1948 and later. Often the median score provides a better illustration of an attribute's distributional characteristics than does a mean or average score because a cluster of high or low scores will likely have a distorting effect on averages. This is evident in some of the differences between mean and median scores presented in this table, for example the difference between mean and median scores for Year Born in LFAs 29 and 31A.

Table 1: Selected Social and Fishing Attributes by Lobster Fishing Areas (LFAs)

Attribute	LFA 29		LFA 31A		LFA 31B	
	Mean	Median	Mean	Median	Mean	Median
Age	51	53	46	44	50	50
Years Fishing	26	21	26	25	29	30
Weeks Fishing (2000)	17	16	22	20	19	16
Boat Age	12.6	12	13.4	13	13.7	12
Boat Length (feet)	29.1	28	29.8	30	30.3	30

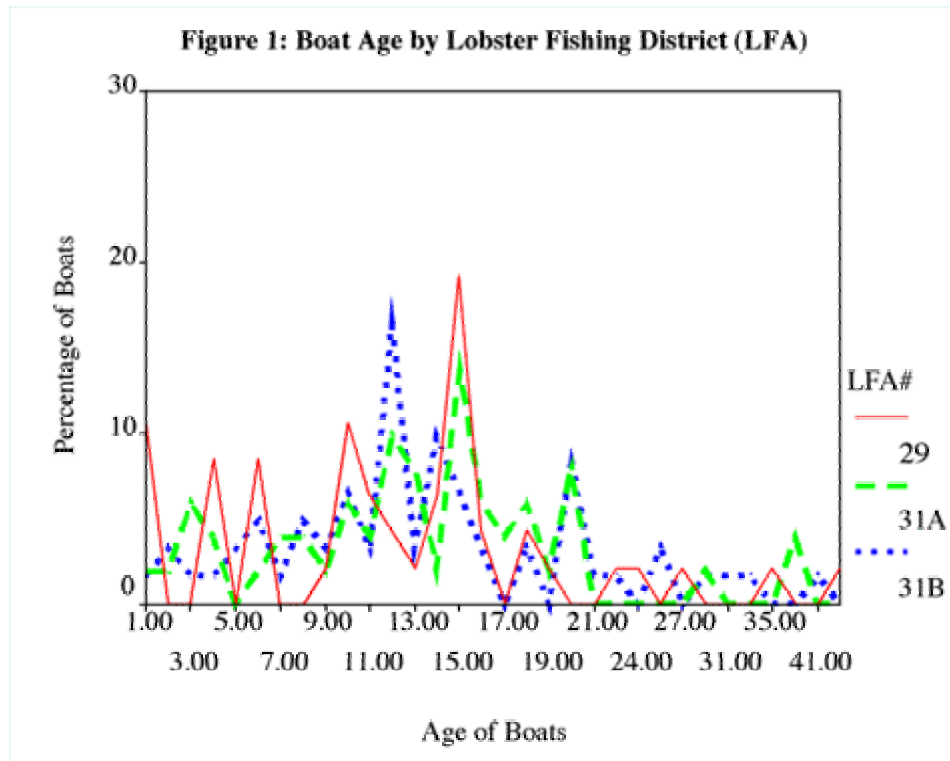
As shown in Table 1, the average age of those holding lobster licenses is 46 years or older. Comparatively, LFA 31A contains the youngest population of license holders while LFA 29, with a mean age of 51, contains the oldest. Moreover, the median scores indicate that LFA 31A contains many license holders that are much younger than those in the two other LFAs. In part, this difference arises from the fact that a disproportionate number of LFA 29 licenses are 'Class B' (8 of 47 respondents) and the holders of these licenses are older. Overall, this difference also suggests that LFA 31A license holders are composed of a larger number of newer entrants than characterises either of the other LFAs. This information also suggests that the lobster fishing captain population in all of the LFAs is aging. As such, it flags the very important issue of the ways and means that new entrants will be recruited into the fishery over the next decade or so. This issue will be examined further when we discuss the participants' responses to questions concerning whether or not they would advise a child to enter the fisheries.

The pattern respecting the participants' years at fishing also shows some interesting and potentially important differences. While on average, those interviewed have fished for 26 years or more, the median scores reveal considerable inter-LFA variation. LFA 29 shows a median of 21 years, while the scores for 31A and 31B are 25 years and 30 years, respectively. Greater numbers of those working in LFA 29 have been fishing for a much shorter time than

license holders in either LFA 31A or 31B. Yet, as we have already seen, LFA 29 features the license holders with the oldest age profile. While seemingly inconsistent, this is likely explained by the fact that, compared to the other LFAs, a much greater proportion of LFA 29 license holders reported that they had not always fished for their living. Fully 51.1% of those interviewed from LFA 29 (24 of 47) reported that they hadn't always fished as contrasted with 32.8% in LFA 31B (20 of 61) and only 17.6% in LFA 31A (9 of 51). This difference would certainly explain the variation in the reported numbers of years fished. It also raises some interesting issues respecting why such a large number of LFA 29 fish harvesters have been so much more likely than those in either 31A or 31B to work for their livelihoods at some point in their lives outside of the fisheries.⁶ Proximity to the trades and other employment opportunities associated with the various industrial developments seated in the Port Hawkesbury area might explain some of this. Additionally, the coastal fisheries in LFA 29 may not have provided a sufficient, consistent basis or prospect for a satisfactory livelihood for a longer period of time than is the case in either of LFA 31A or LFA 31B. Unfortunately, the information available in this phase of the research will not provide a clear answer to issues arising from these trends and differences.

In 2000, those interviewed in 31A reported, on average, having fished for a notably greater number of weeks (22 weeks) than those in either LFA 29 (17 weeks) or 31B (19 weeks). A quick look at the median scores reinforces this comparison, showing that more of those interviewed in LFA 31A fish for many more weeks than is the case within the other two LFAs. While the lobster fishery appears to be the core activity of many in LFAs 29 and 31 B, the greater number of weeks fished by many working within LFA 31B suggests that a notable number participate in fisheries in addition to lobster fishing. Of course, the last decade's moratorium on cod fishing combined with the severe limits placed on other levels of groundfish harvesting have effectively terminated meaningful and sustained livelihood participation for most in these fisheries. This has been applied as a management policy more or less equally throughout the region; but, participation in groundfish fisheries can vary considerably from region to region. This often reflects factors such as local differences in fishing habitats preferred by the various groundfish and in access to seasonally migrating populations. Consequently, the impacts of the groundfish management policies would be experienced quite differently in various localities, with the most effected being those localities most livelihood involved with groundfish fisheries. Certainly some of the comparative differences in weeks fished may be explained by variations in these sorts of effects.

The characteristics of mean and median boat ages and boat lengths reported do not show very much of a difference across the three districts. On average, boats decrease marginally in length as one moves from southwest to northeast. Since the age of the fishing fleet and vessel replacement needs have been identified as concerns, a line graph has been developed that displays comparatively for the LFAs the percentage of boats distributed across the vessel ages specified by those interviewed (Figure 1).



The pattern evident in this graph shows that LFAs 29 and 31B contain greater numbers of the oldest boats than does LFA 31A. While there are newer boats at work within all of the LFAs, this graph also demonstrates that the vast majority of the region's small boats are 10 years or older in age. Given the wear and tear on fishing boats as well as their high rates of depreciation, this pattern suggests that many lobster license holders have little by way of a salable asset in their vessels. Of course, this evidence also underscores the fact that broad-scale vessel replacement will soon become a core need if fisheries livelihoods are to be sustained and economically viable. Finally, vessel replacement will become an even more pressing issue once groundfish have recovered sufficiently to permit broad re-entry into these fisheries. Equitable, safe, and sustainable access to and participation in renewed groundfish fisheries will require substantial renewal of the small boat fleet. Given the fact that many of the region's present day fish harvesters use aging boats of little dollar value and that the groundfish resource crisis has limited and reduced incomes as well as income opportunities, renewing the small boat fleet will no doubt require a public policy initiative offering fish harvesters reasonable access to the financial means to order and to purchase new vessels.

Successful renewal of the region's small boat fisheries will also depend to some extent on the characteristics of those recruited into the fisheries. Today's fisheries pose increasingly challenges, among which navigating complex fisheries management policies and rules likely takes centre stage. Additionally, fish harvesters are required increasingly to participate in fisheries policy meetings

and fisheries management initiatives. Certainly, participants are being required to assume more direct responsibility for the management of key fisheries-related resources such as harbours and wharves. Welcomed or not, achieving and maintaining livelihood success within small boat fisheries is requiring, more so today than was ever the case in the past, that participants engage with representative organisations, fisheries management processes, and a more business entrepreneurial approach to fishing.

Several of the questions asked in this study provide a window on attributes of the region's lobster license holders with respect to the conditions impacting on successful participation in the small boat fisheries. Each of the LFAs contains a core of license holders who are 41 years of age and younger. Notably, in LFA 31A just over forty-five percent of the participants fall into this age category. While smaller in both LFA 29 (30%) and 31B (31%), this younger category is still reasonably well represented. The importance of the population strength of this age category in particular resides in the simple fact that, in all likelihood, it will be the source of future organisational and livelihood leadership. An additional key attribute of this age category is that it is strongly associated with the completion of more years of formal education than is was the case among the older age groups. Additionally, the youngest age group is more likely to have participated (79%) in fisheries-related short courses, technical courses and the like than are the oldest age group (52%). As a final indicator, 70% of the youngest age group reported that they use a personal computer. Further, fully 88% of this group claimed that they would likely attend fisheries-related computer and internet workshops.⁷

These characteristics suggest that the youngest age category has been participating actively in acquiring the formal know-how and skill sets essential for effective operation within the current and future fisheries business and management climate. Considerable critical potential resides within this group. Realising and mobilising this potential can be achieved through measures such as identifying and recruiting likely persons into leadership positions and responsibilities within representative organisations. Such initiatives will be essential to the future vitality and viability of the region's fisheries.

Fishing Licenses

The numbers and varieties of limited entry fishing licenses available and worked within fishing districts are an important indicator of vitality within current fisheries and, importantly, of the potentials for access and participation once the groundfish fisheries recover. Table 2 profiles the distribution by LFA of limited entry fishing licenses by general fishery categories. There are a number of features in this information that require comment. To begin with, it is obvious that most current fish harvesters are in possession of several limited entry licenses. Of course, the advent of the limited entry licenses as a fisheries

management cornerstone essentially compelled most small boat fish harvesters participating through each year in a diversity of fisheries to obtain licenses for each of the fisheries. This became essential in order to assure access both to fisheries in which people were currently engaged and to fisheries offering some prospect of future potentials. Some obtained and maintain certain licenses 'just in case' circumstances such as downturns in current fisheries dictate that they enter 'new to them' fisheries. Assuring access through possession of licenses is a key personal strategy within the context of a limited entry management approach. Possessing and maintaining many licenses is also a reflection of the fact that economically viable and sustainable small boat fisheries require a capacity to participate in a diverse set of fisheries, as well as an ability to respond quickly and with flexibility to available resources and opportunities. For example, many hold 'bait' licenses associated with participation in lobster and groundfish fisheries.

Table 2: Percentage Reporting Possession of General Fishery Category Limited Entry Fishing Licenses by Lobster Fishing Areas (LFAs)

License Categories	LFA 29	LFA 31A	LFA 31B
	(N=47)	(N=51)	(N=61)
	%	%	%
<i>Lobster 'A'</i>	83.0	98.0	93.1
<i>Lobster 'B'</i>	17.0	2.0	6.9
<i>Groundfish</i>	48.9	82.4	72.1
<i>Herring</i>	89.4	76.5	78.6
<i>Mackerel</i>	91.5	92.2	90.2
<i>Tuna</i>	0	13.7	1.6
<i>Other</i>	51.1	68.6	72.1

A second feature worth noting is that there is a small but none the less meaningful lobster fishing capacity that will be removed from the region's fishery, especially in LFA 29, when the Class 'B' licenses are retired when their current users leave the fisheries. This may either benefit existing Class 'A' license holders or provide room for the introduction of one or two new Class 'A' licenses in LFAs 29 and possibly 31B. The simple retirement of these Class 'B' licenses, combined with the fact that fewer in LFA 29 hold groundfish and 'other' category licenses than is the case in either LFA 31A or 31B, would represent a notable reduction in fishing capacity and activity.

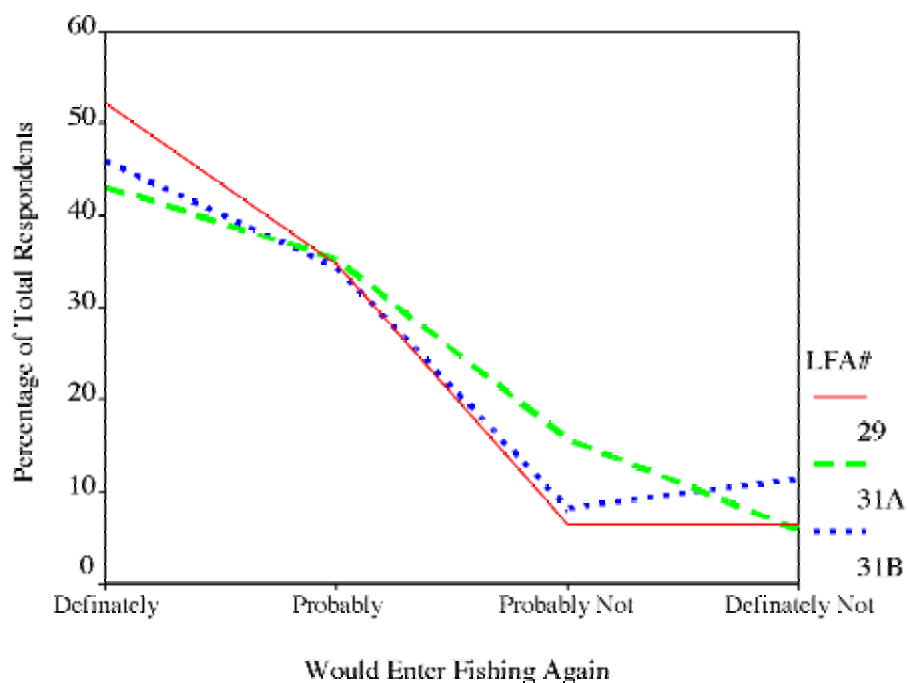
Indeed, the rather stark contrast between LFAs respecting the numbers with groundfish and 'other' category licenses raises important questions about the

future shape of LFA 29 fisheries should either new opportunities arise such as a renewed groundfish fisheries or should lobster resources become even more scarce than currently reported. As currently situated, many in LFA 29 would appear both unable to access future opportunities and, at the same time, particularly dependent on the lobster fishery and, therefore, even more vulnerable than most to marked downturns in the lobster fishery. Most in LFAs 31A and 31B hold a variety of essential of limited entry licenses, enabling them the prospect of participating, within the existing management regime, in a diverse coastal zone small boat fisheries. Certainly the wide variety of 'other' licenses detailed by many further characterises the central place of diversity and flexibility within small boat livelihoods. Practically every imaginable license type was described, ranging from sea urchins, through snow crab, to recreational smelt. Of course, working within a limited entry management system compels many to adopt a 'fishing enterprise business strategy' targeted on accumulating as many licenses as possible. Success at this strategy is also an important element in assuring that families and communities within each locality and region have the prospect of some sort of access to the fisheries 'going' as well as the new possibilities.

Attachment and Recruitment to Fishing

There are several qualities evident in the licensing information and discussion that echo through participants' responses to the questions concerning whether they would enter fishing again if they had their lives to live over and whether they would advise a child to enter fishing under a variety of boat ownership and license possession conditions. Questions of these sort have become established as very solid indicators of how people feel about their fishing livelihood. Very positive personal feelings about and experiences in fishing for a living would be expected to translate into high levels of satisfaction with and attachment to fishing. In turn, high levels of attachment and satisfaction would be expected to translate into unambiguous statements of preference to go fishing if life was to be lived over. Figure 2 displays the distribution of responses by LFA to the question: 'If you had your life to live over, how likely do you think it is that you would go into fishing?'

Figure 2: Percentage Who Would Enter Fishing Again by LFA



No less than 78% (LFA 31A) and as many as 88% (LFA 29) of the participants indicated that they would probably or definitely enter fishing again. In general, these rates clearly indicate that the vast majority of LFA 29, 31A, and 31B marine resource harvesters are both highly attached to small boat fishing and extremely satisfied with core aspects of making their livings from fishing. Of course, these rates are even more remarkable given the recent livelihood difficulties and challenges associated with the groundfish resource crisis and lobster resource abundance. For many, small boat fishing continues to provide considerable personal satisfaction as a way to make a living. No doubt, the rootedness of the livelihood within family and community settings and dynamics also reinforces attachments and influences preferences.

One's inclination to overlook or to struggle with a livelihood's perceived and experienced hardships because of personal attachments does not necessarily translate directly into an opinion that one's children should pursue the same livelihood when choices may be available. Indeed, the results from the question regarding whether or not the respondent would advise a child of their to enter fishing clearly show that many hold deep concerns about the present state and future of the small boat fisheries. Figures 3, 4, 5, and 6 present the response distributions for the 4 separate conditions asked about in the likelihood to advise question.

Figure 3: Would Advise a Child to Enter Fishing From Scratch by LFA

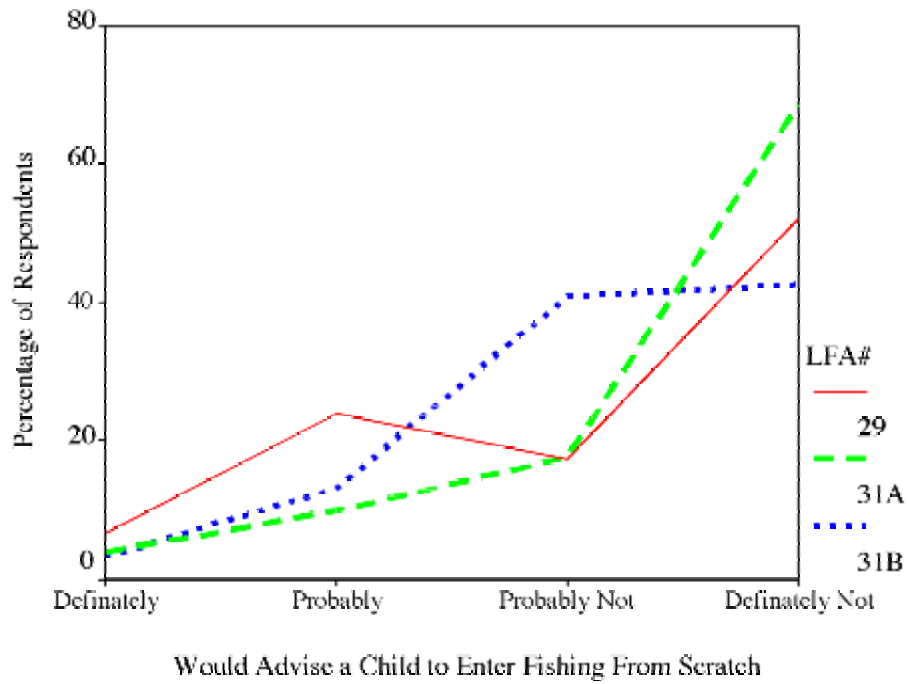


Figure 4: Would Advise With a Boat and a Lobster license by LFA

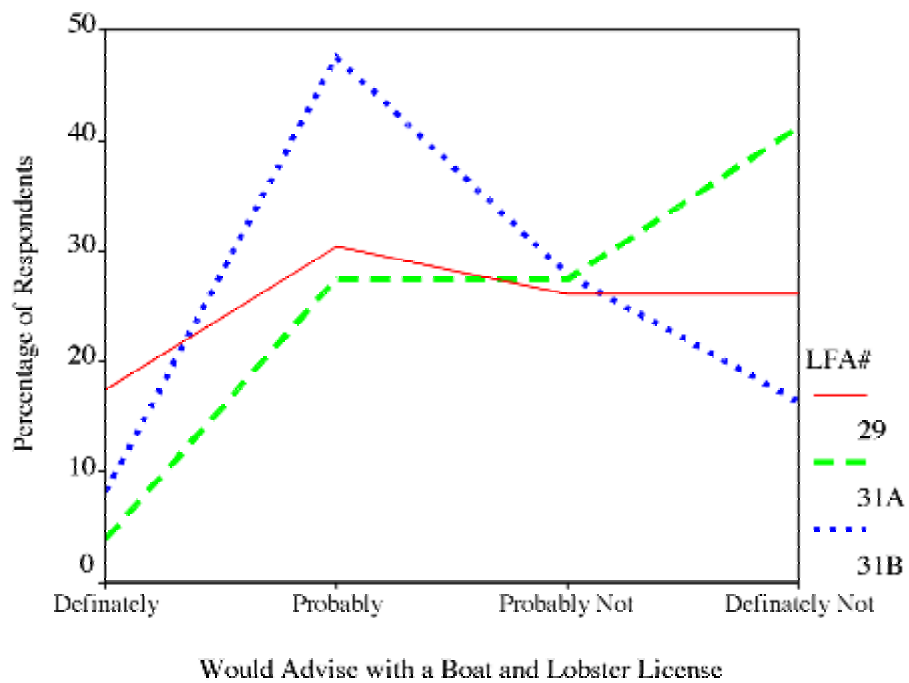


Figure 5: Would Advise if Holding a Boat and All Licenses by LFA

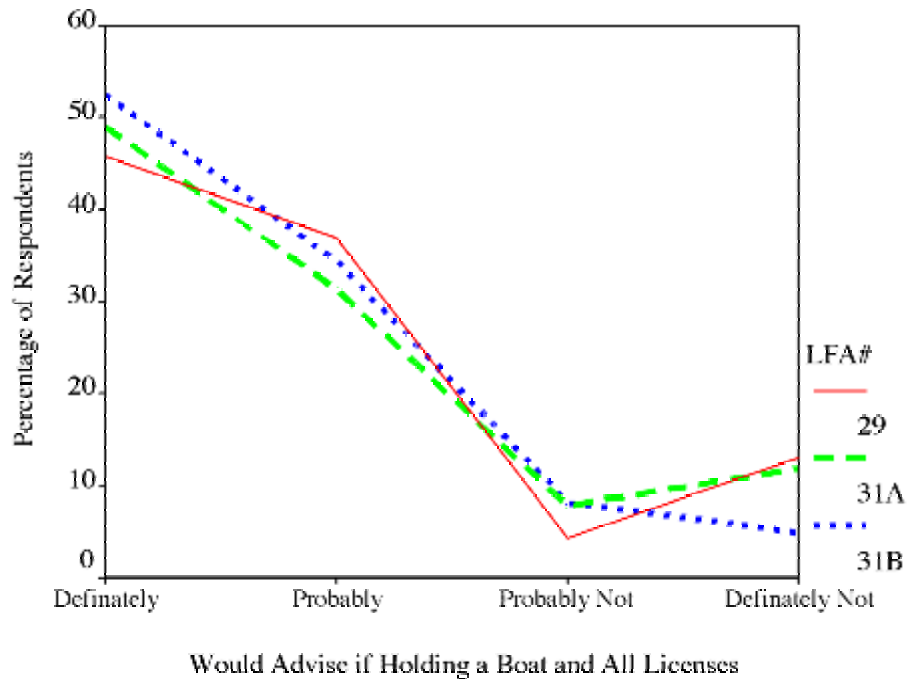
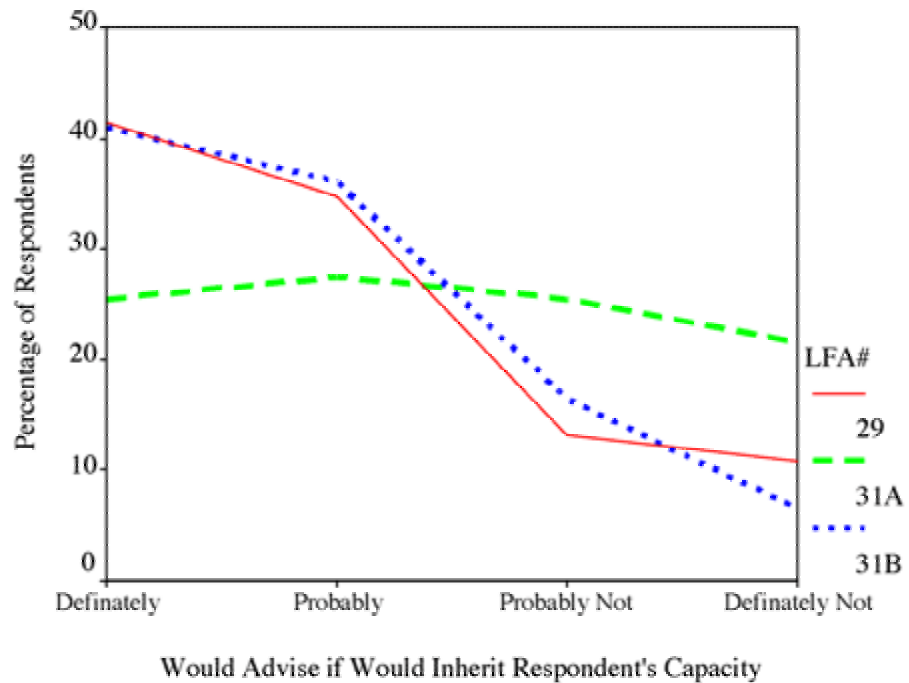


Figure 6: Would Advise if Would Inherit Respondent's Capacity by LFA



No less than 70% (LFA 29) and as many as 86% (LFA 31 A) of the respondents state that they would probably not or definitely not advise a child of theirs to enter the fishery if that child had to begin from scratch. This pattern certainly

speaks volumes about the participants sense of cynicism and limits on possibilities for their children within the current fisheries. It is likely that this perspective mainly reflects experiences with, knowledge about, and local consequences flowing from the present day fisheries management regime. The management regime with its focus on limiting participation through licensing and quota regulations would pose a considerable entry-level challenge, if not effective barrier, for anyone starting from 'scratch'. The debt associated with financing acquisition of a vessel, equipment and core licenses would, in themselves, likely be prohibitive of 'beginning from scratch' entry. Moreover, the costs of servicing the debt, given situation of low resource abundance, would in all likelihood assure economic failure.

The likelihood that these attributes inform the participants' perspective here is suggested by the distributions evident in Figures 4, 5 & 6. Once the prospect of entering the fishery already in possession of a boat and core licenses is introduced, participants in this study indicate that they are much more likely to advise a child of theirs to take up fishing for a living. But, there are some important inter-LFA differences evident in the response distributions that likely reflect local experiences and conditions. For instance, those fishing within LFAs 29 (47.8%) and 31B (55.7%) are much more likely than LFA 31A marine harvesters (31.4%) to probably or to definitely advise a child of theirs to enter the fisheries if that child starts with only a boat and a lobster license. This difference likely reflects the fact that lobster landings and abundance within the LFA 31A fishery have been disappointing, to say the least. Notably, many of the respondents in all LFAs consider possession of only a lobster license as insufficient to advise entry.

Once the condition of entry with a boat and all of the important fishing licenses is introduced, no less than 80% (LFA 31A) and as many as 87% (LFA 31B) of participants in this study indicate that they would probably or definitely advise a child of theirs to take up fishing, with almost one in every two of those interviewed stating that they would definitely advise entry. This no doubt reflects the knowledge that small boat fishing livelihood success is conditional upon developing the capacity to access and participate in a variety of core fisheries throughout each year's fishing season. Certainly the overwhelming positive response rate to advising entry under the 'with all important licenses' condition declares that most remain optimistic and encouraging about the core qualities of small boat fishing livelihoods, once the fisheries management barriers and their liabilities have been somewhat overcome.

This observation is further supported by the responses to the final condition associated with whether they would advise or not. When asked if they would advise under the condition that their child inherits the participants' boats and licenses, considerably fewer of the respondents indicate that would definitely advise entry, particularly within LFA 31A. Of course, these responses are in large measure a reflection of the respondents' assessment of deficiencies with their current fishing capacity, related livelihood difficulties, and perceptions of

resource abundance. Once again these responses are at least as much about assessments of the likelihood of success within the current fisheries management system as they are about resource abundance.

These responses further highlight the issue of the conditions that impact on recruitment to, retention in, and the renewal of the region's community-based, small boat fisheries. In the judgement of many, neither possession of a lobster license nor inheriting an entire boat and license package are sufficient to advise entry. This may explain why a surprisingly low 28% of all respondents indicated that they had a son fishing, while only 7.2% indicating that a daughter was fishing. Indeed more reported wives fishing (35.9%), than sons and daughters combined (35.2%). Perhaps the scenario of a boat and all important licenses, while the basic acceptable condition, actually represents an essentially unattainable state of entry for the vast majority. Given this, most of the participants in this study, while inclined to choose small boat fishing as the basis of their livelihood, are hesitant, if not explicitly opposed, to advising a child of theirs to enter fishing. Such a state of affairs raises many critical issues respecting the processes of recruitment into the coastal fisheries as well as about its capacity to be renewed as a socially sustainable and community/family-rooted livelihood through at least the near future.

Green Crab

One of the recent factors fueling additional concern respecting recruitment to and abundance of harvestable lobster resource is the movement of green crab into coastal waters. This is a foreign species that has been invading estuaries, harbours and shallower coastal waters over the last number of years. It has been moving up the coast of Nova Scotia, from southwest to northeast. The concerns expressed about the impacts of Green Crab range from the prospect of it out-competing juvenile lobster for food, through dominance within lobster nursery habits, to predation upon lobster larvae and early growth recruits. Several question were designed and added to the survey in order to begin to describe the character and depth of the region's lobster harvester experiences with Green Crab.

In sum, 84.9% of those interviewed reported having experience with Green Crab. LFA 31B respondents reported the highest level of experience (90.2%), while those in LFA 29 the least (80.9%). On average, 94% of those with Green Crab experience report landing them in their lobster traps. Notably there is very little variation between LFAs when it comes to the percentages reporting Green Crab in their lobster traps. Similarly, there is very little variation between LFAs respecting the time when those interviewed began seeing Green Crab in their traps. On average, LFA 31B lobster license holders report first seeing Green Crab 4.8 years ago, while those in LFA 31A report first seeing them 5.6 years ago and harvesters in LFA 29, on average, 4.7 years. Given LFA 31B is southwest of LFA

31A, the fact that the 31A's lobster license holders report first seeing Green Crab almost a year before those in LFA 31B raises some questions about the character and pattern of the invasion, as well as local reactions to it. Perhaps 31A contains more of the sort of habitat preferred by Green Crab than does 31B. Similarly, perhaps there have been more opportunities in 31A than in 31B to observe and to interact with Green Crab, for example 31A may contain more shallow water lobster bottom than does 31B.

The final question asked concerned observed trends in Green Crab abundance. While almost 4 of every 5 persons interviewed (79.1%) reported observing increases in Green Crab abundance, several interesting inter-LFA differences respecting trend observations are evident. To begin with, LFA 31A respondents are much more likely (89.5%) than those working in the other LFAs (LFA 29 - 78.9% and 31B - 71.7%) to report observed increases in occurrence. Indeed, about one in every five LFA 29 and 31B respondents report that the abundance of Green Crab has stayed about the same over the years. Indeed, almost 1 in every 10 LFA 31B respondent with Green Crab experience reports that green crab abundance is decreasing. Given that LFA 31B marks the southwest area of the region surveyed, the reports of decreased occurrence may suggest that Green Crab are settling into a particular place within local coastal habitats, and that this trend will soon become apparent within the other LFAs.

What Does It Mean and What Is To Be Done?

The information presented here describes the rich social context of the region's small boat coastal fisheries. It also highlights the deep attachment to the fishing livelihood that remains broadly felt by the vast majority currently participating in the fisheries. This attachment is grounded in the fact that small boat fishing livelihoods are seated within and to a large extent defined by families and communities. To a large extent, the future sustainability of the region's small boat fisheries will depend extensively on the capacities of families and communities to remain at the heart of fishing livelihoods. Conversely, the sustainability of communities and families throughout the region's coastal areas will continue to depend, in no small measure, on the development and maintenance of economically viable fisheries' livelihoods in which participants experience high levels of satisfaction and attachment.

Having noted these critical qualities, it must be said that the information provided by those interviewed certainly underscores the importance of recruitment to building and sustaining the fisheries' dynamism and viability. The average ages of fishing captains and license holders throughout the region show a pattern wherein the majority are becoming senior in years. Furthermore, recruitment of younger persons into these positions over especially the last thirty years has been, at best, uneven and, at worst, insufficient to assure the fisheries future continuance. This situation has arisen from a number of circumstances.

Without question, the crisis in access to groundfish resources has accelerated the difficulties in realising viable fisheries livelihoods. This, when combined with shortages in harvestable lobster, creates a situation whereby fishing quickly becomes unattractive to many as a possible source of a satisfying and viable livelihood. This is not a region in which small boat fisheries can be sustained through a reliance on one or two high value shellfish fisheries. In this region, access to and participation in a variety of small boat fisheries through the course of the entire year is the basis on which sustainable fishing livelihoods are achieved. Certainly this has been acknowledged in the study by the fact that a solid majority of those interviewed would advise a child of theirs to enter the fishery only if they could begin with a boat and all of the important licenses. In the past, recruitment was assured through fishing family processes and socio-economic interests. But, recent experiences in the small boat fisheries have left most fishing captains and license holders with the view that, while strongly attached to fishing themselves, fishing for a living simply is not a viable option for their children. The surprisingly small percentage reporting that they have sons currently fishing would seem to be the likely consequence. These findings suggests that family-based recruitment is in the throes of dilemma and crisis.

Of course, residing at the heart of this issue is the role and impacts of fisheries management policies and regulations. Possession of key limited entry licenses and, in some fisheries, quota is now required in order to have any hope of achieving a viable livelihood. Indeed, the distributional and access characteristics of the region's marine resources pretty much dictate that livelihoods be based upon participation in a variety of fisheries. Contrary to this, the current situation is all about limits, limits defined by licenses, quotas, regulations, and marine resource scarcities. Such limits severely curtail the numbers of weeks that most may currently fish, thereby limiting current earnings and potential incomes. But, the dollar value of licenses and quotas is such that, for many, possession is quickly becoming next to impossible. And, many of those able to finance purchase of the key licenses and quota soon find themselves working to cover the associated debt rather than achieving a satisfactory livelihood. That is, they fish for their licenses and quota, rather than fishing their licenses and quota for their livelihood and families. This is not the sort of situation that would be encouraging of recruitment. Arguably, fisheries management policies and regulations have at least fueled, if not directly caused, many of the social, economic and resource conditions contributing to the situation described here.

Now, this study does demonstrate that throughout the region there has been some important recruitment over the last decade of younger persons into the positions of captaincy and license possession. This group represents the core cohort from which future family-based recruitment will either rise or fall. Further, this group also will be providing the next generation of leaders for fisheries organisations and communities. Unlike most of the senior group, the younger cohort has participated more broadly in both formal and fisheries-related education and training. Equipped with these skills, in combination with their fisheries know-how, many of these captains and license-holders are well

positioned to engage, to debate, and to negotiate with government, industry, and research. Encouraging this group's participation within fisheries organisations and issues will be vital to the future sustainability and viability of fisheries livelihoods, and of the region's coastal communities.

Throughout the study several issues have been raised that point in the direction of further research. Among these are:

- The downloading from government to small boat fish harvesters and communities of financial and maintenance responsibilities for small craft harbours and wharves. The on-going resource and related income crises has made it extremely difficult, if not impossible, for many communities to generate sufficient revenue to cover the costs for harbour and wharf maintenance. Degradation of harbours and wharf facilities forces harvesters to shift their boats to other locations, inevitably assuring the loss of facilities that define and make-up the essence of being a coastal community. The characteristics and consequences of 'downloading' for fishing livelihoods and coastal communities have been specifically identified by participants as an issue of grave concern that requires a specific research focus.
- Application of computer-based opportunities within the fisheries and coastal community settings has been identified as potentially important to fostering viability and sustainability. Building computer-based capacities may provide opportunities that range from resource marketing and equipment information, through direct sales, to distance site participation in fisheries organisation and management meetings. Research is required to explore the economic feasibility, social practicality, and 'ways and means' attributes associated with developing computer system based approaches.
- Small boat fishing as a way of living and livelihood and the contribution that it and coastal communities make to provincial and regional life and economy need to be much better understood and appreciated by the public at large, let alone by government regulators. One way of assuring this is through developing research-based and informed materials developed for use within the public education system.
- Documenting local knowledge of fishing grounds has been identified as an important area in which to focus future social research. Documenting this knowledge is an important element in representing local experiences and understandings within fisheries management and policy settings. Further, documented local knowledge respecting attributes such as nursery areas, habitat key for reproduction and recruitment, and seasonally critical areas with respect to resource access will be essential for development of locally-driven fisheries management initiatives. These, in turn, will be vital in any effort to rebuild local fisheries resources and to develop sustainable fisheries livelihoods.

Certainly the enthusiastic participation in this study of the region's lobster license holders and captains is a clear indication of broadly felt concerns. Notably, this also represents the fact that most remain hopeful that positive steps can be taken to address the situation. Indeed, many appear ready to participate in initiatives offering promise. This enthusiasm and commitment represent critical and essential resources for any remedial actions. These, coupled with diligence and patience, offer considerable promise for capturing the moment and for successfully developing the basis for viable and sustainable small boat fisheries' livelihoods.

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²[A copy of the questionnaire can be viewed within or obtained from the SRSF website](#) . A version of the questionnaire employed in the St. George's Bay study can be viewed within or obtained from the St. George's Bay Ecosystem Project website (www.stfx.ca/research/gbayesp).

³[A copy of this letter can be viewed from within the SRSF website](#).

⁴The May-June onset of the lobster fishing season explains why we were unable to contact many of these persons. For instance, several were identified as fishing during the season from remote nearshore islands.

⁵The exact participation rates by LFA's were 29 –71%, 31A – 73%, 31B(+ the few in 32) – 84.7%. Certainly the high level of participation in this telephone survey indicates a high level of interest in and, perhaps, concern about the research issues and topics under investigation.

⁶Notably this distribution receives a Chi-Square score of .002, meaning that there exists a very significant and statistically meaningful relation between LFA and participants' reported history of working at livelihoods other than fisheries.

⁷In all likelihood, familiarity with and skill in applying computer- and internet-based applications will become increasingly important within the small boat fisheries of the future. Applications will extend from 'on the water' to exploring marketing and equipment supply opportunities. Given the extreme distance and travel challenges confronted by many with respect to participation in fisheries organisations and decision-making, engagement and communication through internet-based video conferencing and similar 'new economy and information systems' applications will offer tremendous potentials. In fact, imaginative use of

these technologies might just become critical to sustaining and revitalising coastal community and family-based small boat fishing livelihoods.