LURA
LISTEN · UNDERSTAND · RELATE · ADVANCE

Public Confidence in Aquaculture

A Community Engagement Protocol for the Development of Aquaculture in Nova Scotia

Survey Analysis Report

Nova Scotia Fisheries and Aquaculture
Submitted by Lura
September 2010

t: 902.422.8088 · f: 902.482.7146 · www.lura.ca
3650 Hammonds Plains Road, Unit 14, Suite 350
Upper Tantallon, Nova Scotia B3Z 4R3 Canada

Table of Contents

Executive Summary

In 2005, Nova Scotia accounted for only 6% of Canada's national aquaculture production. The Nova Scotia Department of Fisheries and Agriculture continues to actively promote local aquaculture products and operations, however they have discovered the main barrier to the further development of aquaculture in Nova Scotia to be a lack of public support. As a result, they have realized the need to develop a Community-Based Social Marketing (CBSM) Campaign that will not only educate residents about aquaculture practices, but will foster greater public support for fish farming operations and products within the province.

As part of this initiative, a telephone survey was conducted with 673 Nova Scotian residents to determine the average level of understanding, perceptions and concerns, sources of information, and barriers and benefits regarding aquaculture and its further development within the province. The information gained from this survey will inform the CBSM strategy and future educational campaigns.

The main findings discovered through this survey are as follows:

1) Familiarity with Fish Farming

- People who have visited or have seen a fish farm are significantly more familiar with fish farming operations.
- People who know someone who works in the fish farming industry are significantly more aware of aquaculture practices, however having contacts in the commercial fishery does not significantly contribute to awareness levels.
- Individuals with fish farms in their communities, or planned for the future, are significantly more familiar with fish farming.
- Men, older residents, and those with a higher level of education are significantly more familiar with fish farming.

2) Resident Eating Habits

- Most residents eat shellfish and almost all eat fish, with the most popular products being scallops, haddock, halibut and Atlantic salmon.
- Individuals with local aquaculture operations in their communities are significantly more likely to eat products from fish farms.
- Males, older residents, those with a higher level of education, higher family incomes and those in coastal communities are significantly more likely to consume fish farm products.
- Many Nova Scotian residents are not aware of where their fish originates from or what specific products are commonly farmed. Half of the population is interested in knowing these sources.
- Many residents are unaware that they are already consuming products from fish farms (mussels and Atlantic salmon in particular).

3) Resident Perceptions of Fish Farming and Sources of Information

- People see aquaculture as being very important for job creation and local economies.

- Residents strongly believe that fish farms should be placed in areas where they do not result in environmental damage, and where they do not interfere with the commercial fishing industry, recreation or scenic views.
- Many people are uncertain on some aquaculture topics.
- Education is needed to dispel aquaculture myths.
- Information would be best provided in a convenient manner (television, radio, newspaper) and derived from expert sources, such as scientific journals, fish farms or local aquaculture associations.

This report provides a brief introduction to the project and its background, followed by information on the methodology of the study and discussion and illustration of the more detailed findings.

1 Introduction

Much as land production of food evolved thousands of years ago from hunting and gathering to one of farming -- aquatic food production is undergoing a similar shift. In fact, in 2005 farmed fish production in Canada represented 25% of the national commercial fishery, comprising 154 million tonnes of fish and seafood with a value of $715 million. With the declining harvests in the traditional fishing industry, aquaculture is poised to increase its percentage of the overall food supply.

British Columbia and New Brunswick are Canadian leaders in this high-growth industry which is present in every province in the country, as well as in the Yukon Territory. The estimated number of full-time year-round jobs in the industry is 14,000, providing significant economic growth, often to small communities who need it most.

Nova Scotia accounted for 6% of national aquaculture production in 2005, with the predominant species being Atlantic salmon and steelhead, and shellfish products including blue mussels, quahaugs, oysters and scallops. In the rest of Atlantic Canada, New Brunswick, Prince Edward Island and Newfoundland accounted for 24%, 12% and 5% of national production respectively.

The Nova Scotia Department of Fisheries and Aquaculture actively promotes and assists the local aquaculture industry. In 1996, the Province developed the Nova Scotia Aquaculture Development Strategy, in order to provide a framework for the growth of the industry. The strategy was revised in 2000, and in 2005 the Province engaged the public in consultation on the industry by releasing a discussion paper and inviting comments.

A number of constraints for growth in the industry have been identified, and the Province is striving to support the industry by addressing these barriers. One apparent obstacle is a lack of public support in the province for aquaculture projects, and the opposition to local proposals often found in communities. In Nova Scotian communities, the level of support for aquaculture is reportedly lower than in the rest of Atlantic Canada, and proponents often find greater opposition to projects than they do in other provinces. As a result, some proponents of projects in Nova Scotia have made the move to other provinces where they have felt more welcome.

The need for an informed public is recognized by the Nova Scotia Department of Fisheries and Aquaculture as an important key to the success of the aquaculture industry in Nova Scotia. It is further recognized that it will take more than a traditional advertising campaign to reach communities across the province and help people understand the facts about aquaculture and the opportunities the industry presents. It is felt that a grass-roots Community-Based Social Marketing (CBSM) campaign is required, one that will engage people in their communities, hear their concerns, and respond with facts and explanations.

The campaign must learn from the experience of proponents, both successful and unsuccessful, in their attempts at developing projects in Nova Scotia communities. It must look for community leaders who can assist in promoting responsible, sustainable aquaculture in their communities and it must develop support from within these communities.

Accordingly, the Nova Scotia Department of Fisheries and Aquaculture retained Lura Consulting to assist in the development of a Community Engagement Protocol, along with specific recommended tools and actions that will stimulate various audiences in a number of areas across the province. The Protocol will be developed based on five key priority opportunities that have been identified through rigorous research and consultation with key stakeholders and members of the public. The protocol will have the goal of fostering greater support for a sustainable aquaculture industry in Nova Scotia.

In order to contribute towards the development of an effective and educated protocol, Lura Consulting developed and conducted a survey of a large sample of Nova Scotians in order to gain information on current aquaculture perspectives, respondents' familiarity and experiences with fish farming concepts, their sources for aquaculture information and their receptiveness to the development of local fish farms.

This report discusses the survey design, its goals and purpose, and provides a detailed analysis of the results, followed by a discussion and a summary of key findings.

2 Methodology

Lura conducted a random telephone survey of 673 residents across Nova Scotia to measure knowledge and perceptions of aquaculture. The results are accurate to within 3.8%, 19 times out of 20.

The survey was conducted by selecting random phone numbers across the province. A total of 7649 phone numbers were dialled in order to complete the survey with a sample size of 673 respondents. As there were a large number of postal codes represented, these have been amalgamated into FSA codes, to document from where respondents originate. A list of FSA codes can be found in Appendix A, along with the number of respondents from each area.

In order to fulfil the goals of the survey, respondents were asked, within a ten to fifteen minute timeframe, to address a number of key questions, designed to determine:

- Their understanding of aquaculture;

- Their perceptions and concerns – both overall and local;
- The perception of value/benefits of local aquaculture;
- The barriers to acceptance of aquaculture operations;
- Opportunities to overcome the barriers;
- Sources of information; and
- General demographics.

The survey data can be found in Appendix B.

3 Survey Results

3.1 Respondent Demographics

When asked what type of community they live in, most respondents report that they live in either a town or village (35%) or a rural area (37%). The remainder report that they live in coastal communities (28%), with only a few individuals reporting that they live in cities. This is a measure of how people feel about their community, and unless people live directly in the urban cores of either Halifax or Sydney, it is apparent that they do not see themselves as city-dwellers. (Information on postal codes was gathered for more precise determination of location.) Almost all respondents (95%) live in Nova Scotia year round, however several people live elsewhere for part of the year, and as a result reside in Nova Scotia for anywhere from 2 to 11 months of the year.

Most individuals (95%) have lived in Nova Scotia for at least 5 years prior to the survey, with the remainder having arrived during the past five years from several places including other Canadian provinces, the United Kingdom, Switzerland, Taiwan and the Philippines.

There were considerably more females (61%) than males (39%) who completed the survey.

With regards to age, there were a relatively equal number of respondents in the 46-55, 56-65 and over 66 age groups (24%, 25%, and 23% respectively). There were slightly fewer respondents in the 36-45 age group (14%) and only 12.9% of respondents were under 36 years old.

Thirty-nine percent of respondents refused to provide their household income information, however, of those who did, 28% have a household income of less than $50,000 per year, while 21% earn between $50,001 and $100,000 per year, with the average numbering just under $50,000 per year. This is consistent with Statistics Canada data.

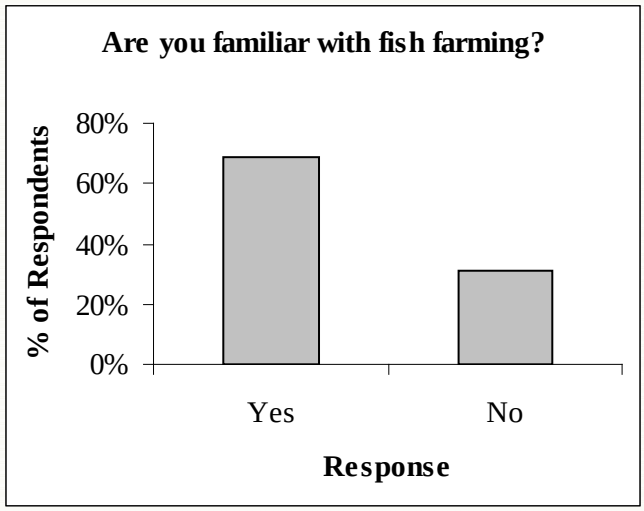
The respondent population was relatively educated with 41% of them having completed at least a university or college degree, if not post-graduate studies of some type. Of the remainder, 24% had completed high school, 15% had completed some university or college courses and 19% had completed some grade school. This indicates that future marketing or informational campaigns should take into account the wide range of respondents' education levels, and should be developed in a manner that is engaging and understandable for people with different levels of education.

3.2 Familiarity with Fish Farming

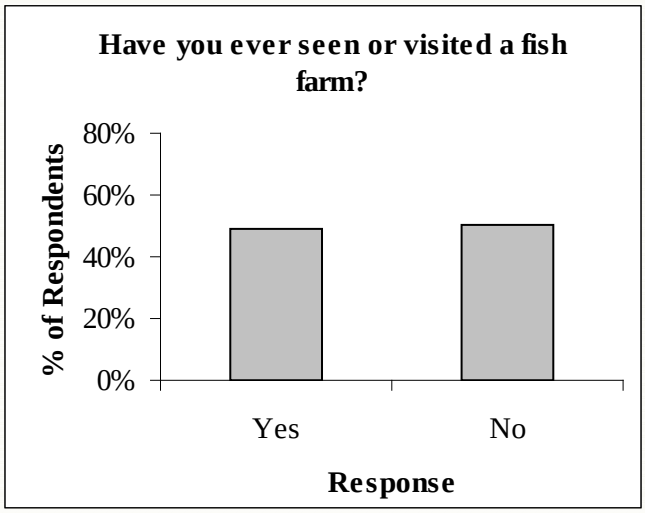
- **People who have visited or have seen a fish farm are significantly more familiar with fish farming operations.**
- **People who know someone who works in the fish farming industry are significantly more aware of aquaculture practices, however having contacts in the commercial fishery does not significantly contribute to awareness levels.**
- **Individuals with fish farms in their communities, or planned for the future, are significantly more familiar with fish farming.**
- **Men, older residents, and those with a higher level of education are significantly more familiar with fish farming.**

Most respondents who took the survey (69%) consider themselves to be familiar with fish-farming operations, however only approximately half of all respondents (49%) had ever seen or visited a fish farm (Graph 1 and 2). Fish farm visits do significantly impact the knowledge of residents with 83% of respondents who have visited a fish farm reporting that they are familiar with aquaculture concepts, compared to only 55% who had not visited a farm.

Graph 1



Graph 2



Although there does appear to be a relatively high level of awareness of fish farming among Nova Scotian residents, only 17% of survey respondents know friends or family who work or have worked in the aquaculture industry, compared to 45% for the commercial fishery. In addition, only a small proportion of respondents have worked within the commercial fishing industry (21%). There is however, a significant relationship between aquaculture industry acquaintances and one's level of awareness with 87.5% of respondents who know someone in the industry being familiar with fish farming concepts, compared to only 65% who have no industry contacts.

Having experience or contacts in the commercial fishing industry however, has no significant impact on one's awareness level, with only 21% of those who are familiar with fish farming, having worked in a commercial fishing operation and the remainder being familiar yet having no working experience in commercial fishing. With regards to personal contacts in commercial fishing, of those with contacts, 47% are familiar with farm fishing, which is only slightly higher than the 40% who are not familiar.

Most residents are aware of whether or not there are fish farms in their communities or planned for the future, with 69% percent reporting that no fish farms currently or in the near future will exist in their communities, and only 10% indicating they were unsure. This indicates that many residents tend to keep up with general aquaculture news and information, particularly when it relates to, or could impact their own community.

The relationship between farm proximity and residents' familiarity of fish farming is significant with 81% of those with local fish farms being familiar with fish farming, compared to only 19% who are less knowledgeable. This indicates that the Nova Scotian population appears to be relatively aware of fish farming initiatives within their province, and that the proximity of fish farms will significantly impact their level of awareness.

Residents' familiarity with fish farming is also impacted by several demographic characteristics, including gender, education and age. For instance, 78% of males report that they are familiar with fish farming practices, compared to 64% of females.

Those with a higher level of education are also significantly more familiar with 50.8% of those with grade school level knowledge being aware of fish farming practices, while substantially more respondents with post graduate experience (77%) are familiar with the industry.

With regards to age, 74% of respondents aged 18-25 are not familiar with fish farming, while a relatively similar number of 56 – 65 year olds (76%) are familiar. Respondents' awareness however, appears to increase substantially past 25 years of age and then stay relatively the same as they continue to age, indicating that generally three-quarters of the population over 25 years is familiar with fish farming. The only distinction arises in those over 65 years of age, where slightly fewer respondents were familiar with fish farming (61%) than in the lower age groups. The large difference found between those over and under 25 may simply be due to the younger age group having not yet personally encountered fish farming.

Those most likely to be knowledgeable about fish farming are:

- People who have visited fish farms
- People with contacts in the industry
- People with fish farms in their community
- Males
- People with a higher level of education
- People between 25 and 65 years old

3.3 Respondents' Eating Habits

- **Most residents eat shellfish and almost all eat fish, with the most popular products being scallops, haddock, halibut and Atlantic salmon.**
- **Individuals with local aquaculture operations in their communities are significantly more likely to eat products from fish farms.**
- **Males, older residents, those with a higher level of education, higher family incomes and those in coastal communities are significantly more likely to consume fish farm products.**
- **Many Nova Scotian residents are not aware of where their fish originates from or what specific products are commonly farmed. Half the population is interested in knowing these sources.**
- **Many residents are unaware that they are already consuming products from fish farms (mussels and Atlantic salmon in particular).**

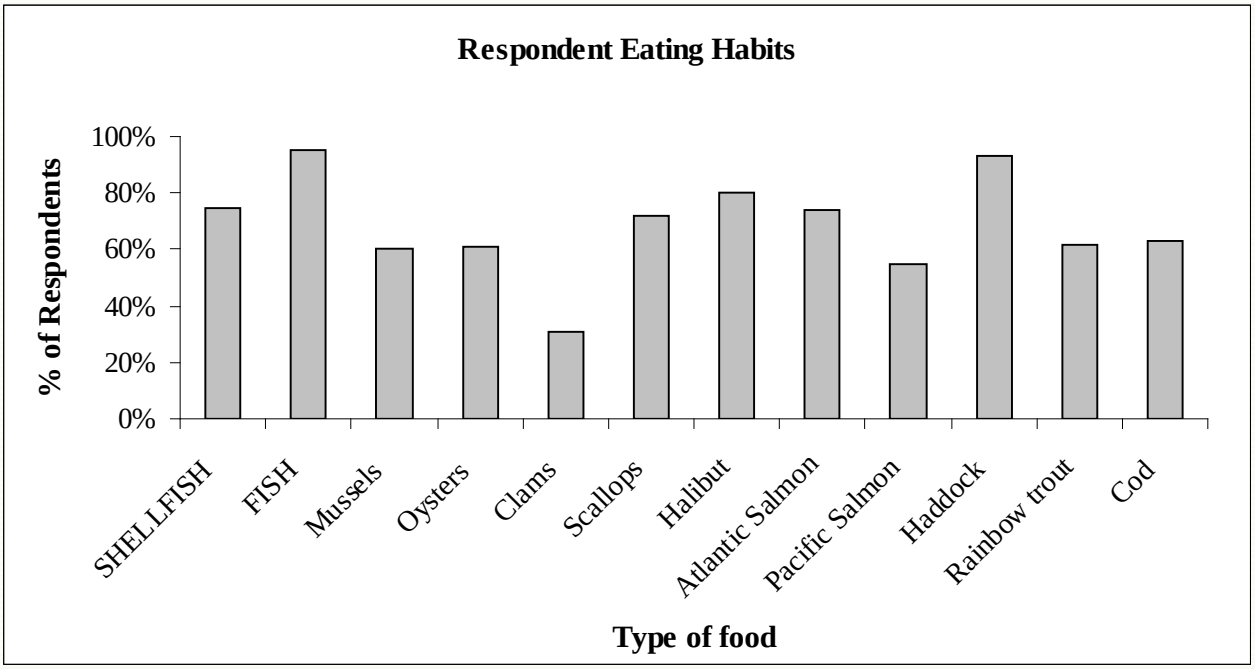
3.3.1 Consuming Fish and Shellfish

As seen in Graph 3, approximately three-quarters of the survey population eat shellfish, including mussels, clams, oysters and scallops. Of the 25% who reported that they do not eat shellfish (Graph 4), almost two-thirds indicated they simply do not like it, 5% stated they are allergic to shellfish, and 2% reported it to not be part of their diet, or that they are vegetarian. The remaining people provided a variety of reasons including contamination levels, ethical reasons, the expense and the lack of shellfish availability in their area. For those who do eat shellfish (75%), the most popular choice appears to be scallops at 72%, followed by clams and mussels, both at approximately 60%. Oysters are least popular, only being consumed by 31% of applicable respondents.

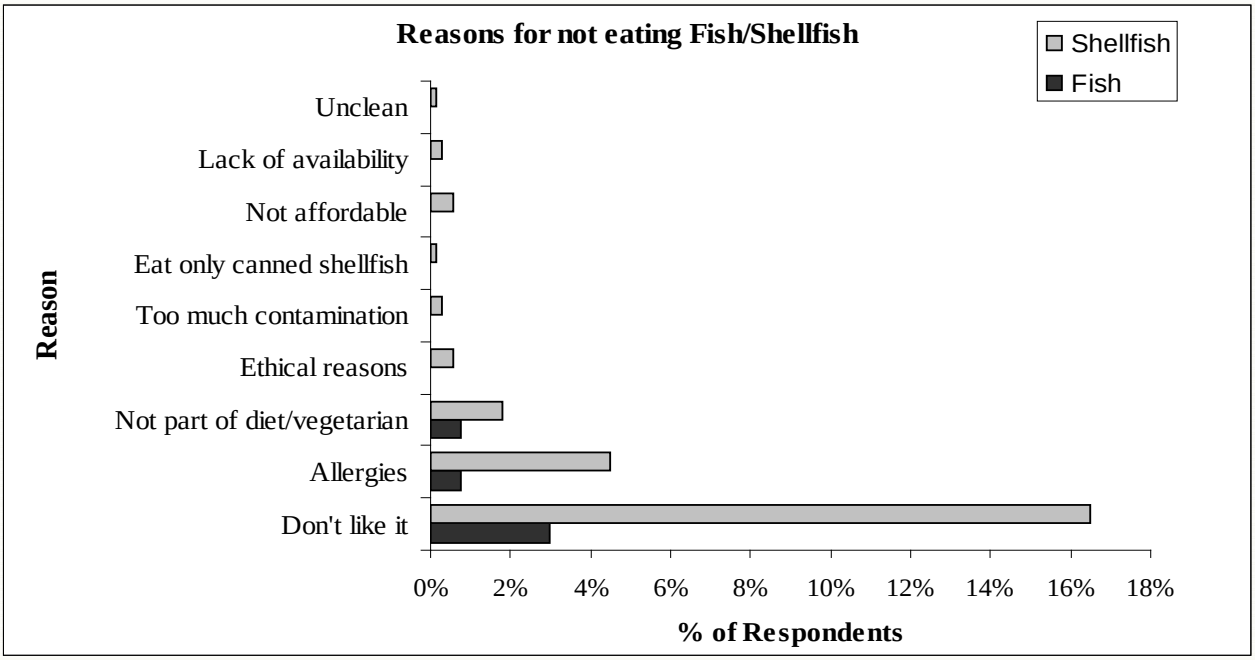
Eating finfish is considerably more common among respondents, with 95% of the survey population reporting that they eat finfish. Of the 5% who do not, the main reason is that they simply do not like it (3%), while several other respondents reported they are either

allergic to fish, or it is simply not part of their diet. For those who do eat fish, the most popular choice appears to be haddock (93%) followed by halibut (80%), Atlantic salmon (74%), cod (63%), rainbow trout (61%) and lastly, pacific salmon at 55%.

Graph 3



Graph 4



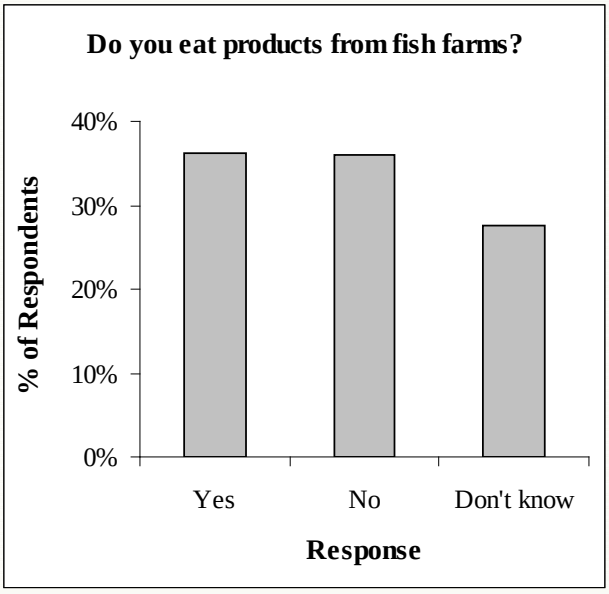
As one could expect, whether or not one eats fish and shellfish appears to impact one's awareness of fish farming, with 70% of those who eat fish, and 74% of those who eat shellfish, being familiar with fish farming practices. Differences also exist within this

relationship based on the type of fish or shellfish eaten. Those who eat mussels, oysters, Atlantic salmon, Pacific salmon, rainbow trout, and cod are significantly more familiar with fish farming, while no relationship appears to exist between one's level of awareness and the eating of scallops, clams, halibut and haddock.

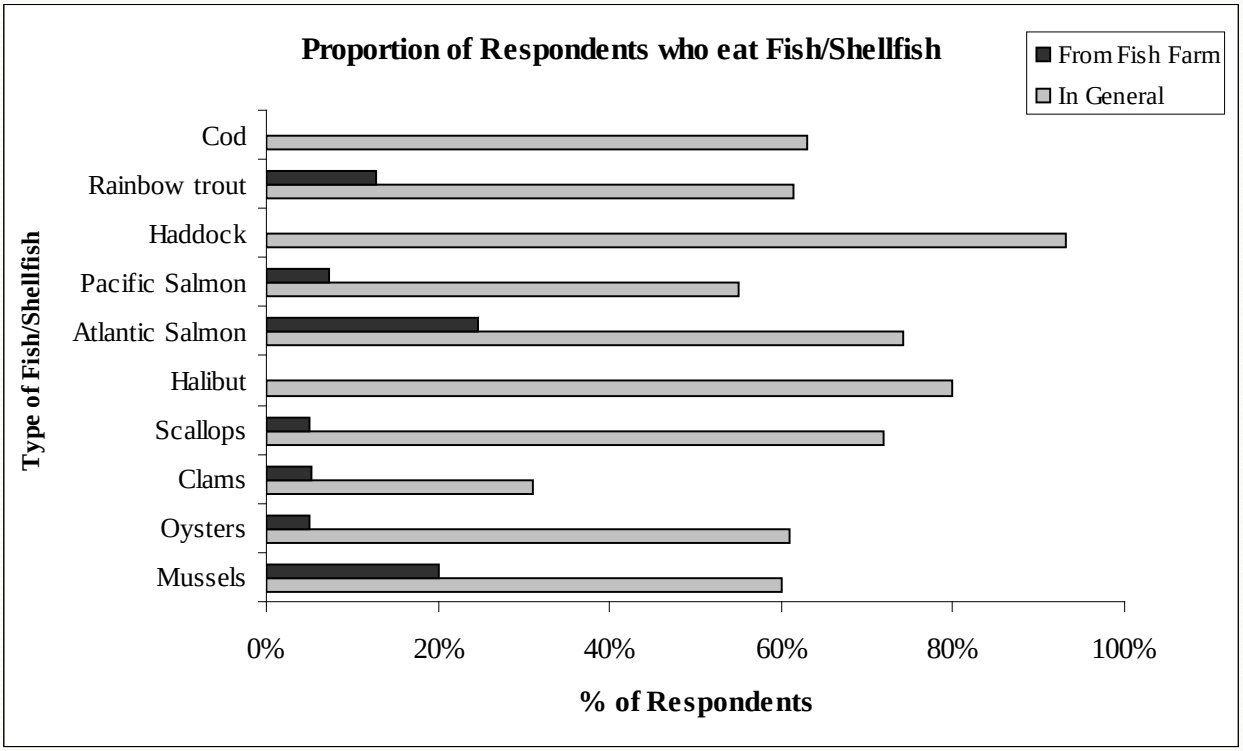
3.3.2 Consuming Fish Farm Products

When respondents were asked whether they consume products from fish farms, an equal number of people reported that they do (35%) and do not (35%) consume these items (Graph 5). With regards to the types of food that the 35% of respondents believe they eat from fish farms (Graph 6), the responses varied greatly, with Atlantic salmon and mussels being the most popular choices at 25% and 20% respectively. Other less popular products included rainbow trout (13%), pacific salmon (7.4%) and oysters, clams and scallops, each numbering 5%.

Graph 5



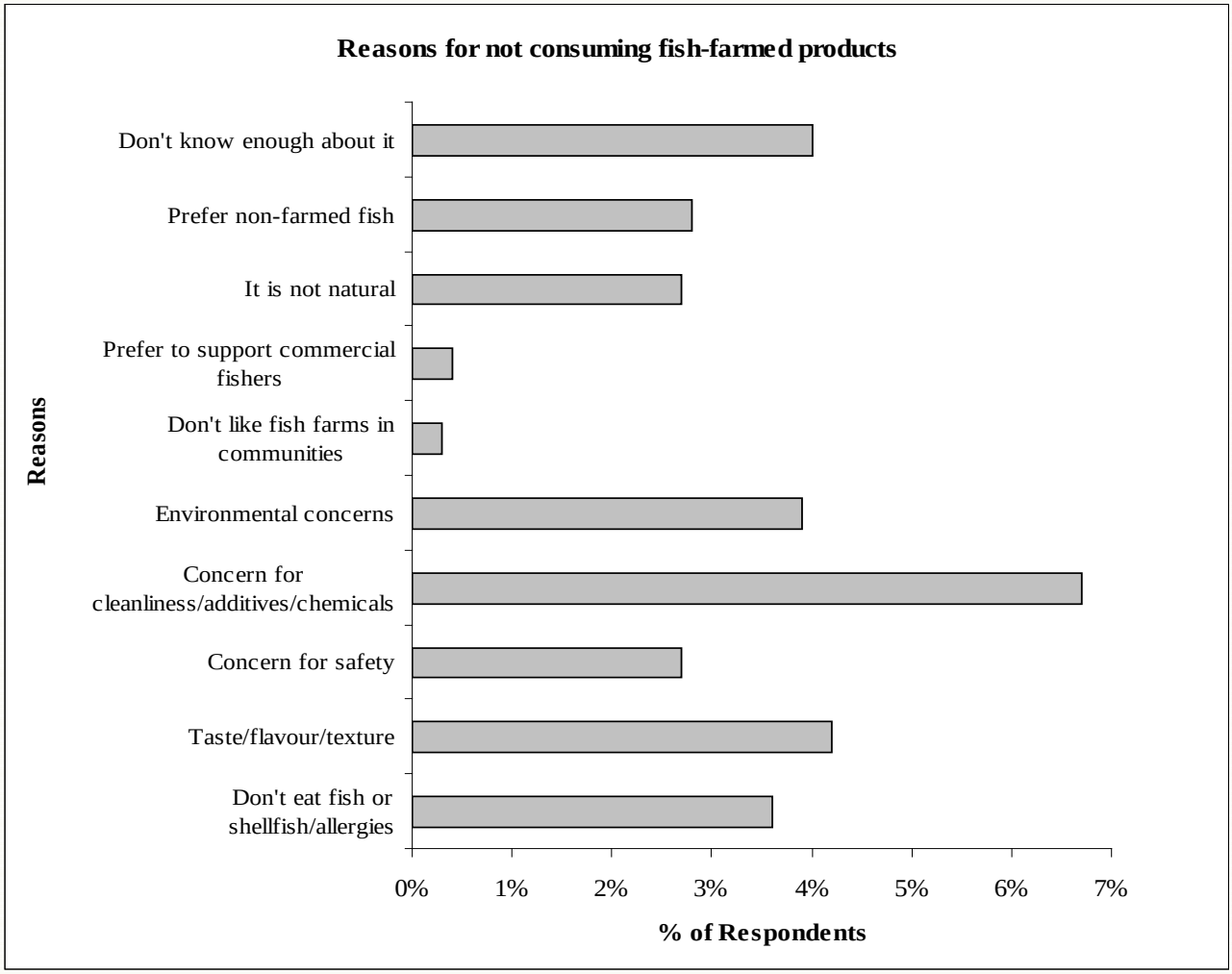
Graph 6



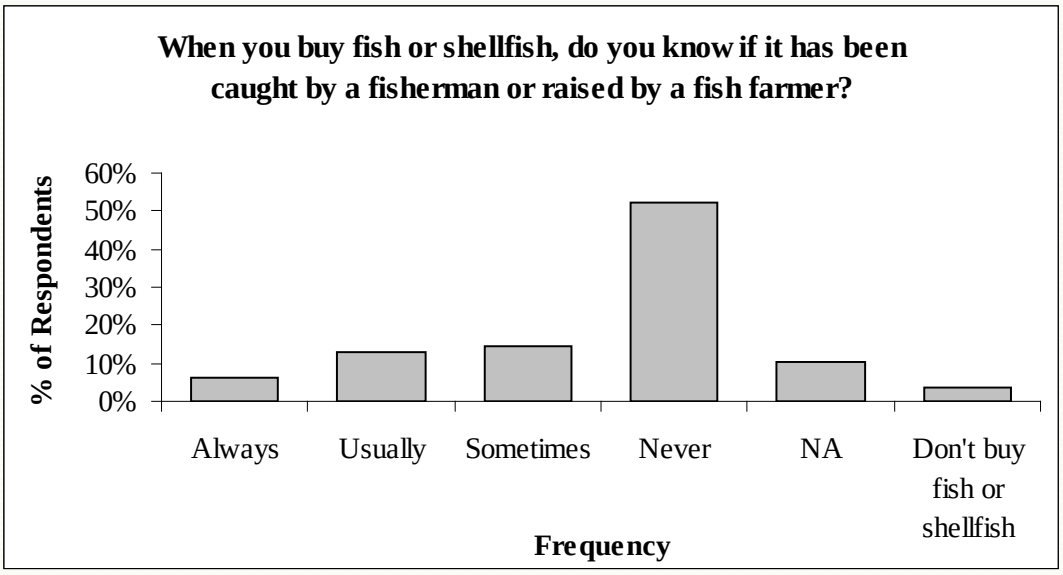
Those who reported to not eat fish farm products provide a variety of unprompted reasons, with almost three-quarters of respondents not providing any specific reasons for refraining from consuming these products. For those who could provide a reason, Graph 7 presents the percentage of total survey respondents for each reason identified. The most popular response was due to chemical or cleanliness concerns (7%), followed by a dislike for the taste/texture or flavour (4%), environmental concerns (4%), simply not being a fish or shellfish consumer (4%) or not knowing enough about fish farming. Other less common responses included general concerns about safety (3%), preferring non-farmed fish (3%), and the fact that fish farming is not natural (3%). It must be kept in mind that these are very small numbers of respondents.

A large proportion (26%) of respondents did not know whether the seafood they eat originates from fish farms (Graph 5). Later, when asked a similar question (Graph 8), over half (52%) of respondents indicated that they never know whether the products they buy originate from fish farms, or whether they are caught commercially, while only 34% agreed that they at least sometimes know where their fish originates from. When asked if they consumed specific species from fish farms, there was also a large amount of uncertainty, ranging from 11% to 35% per seafood product. For instance, in terms of eating farmed oysters, 15% of respondents agreed they consume this product, while 57% reported they do not, and 28% were unsure.

Graph 7



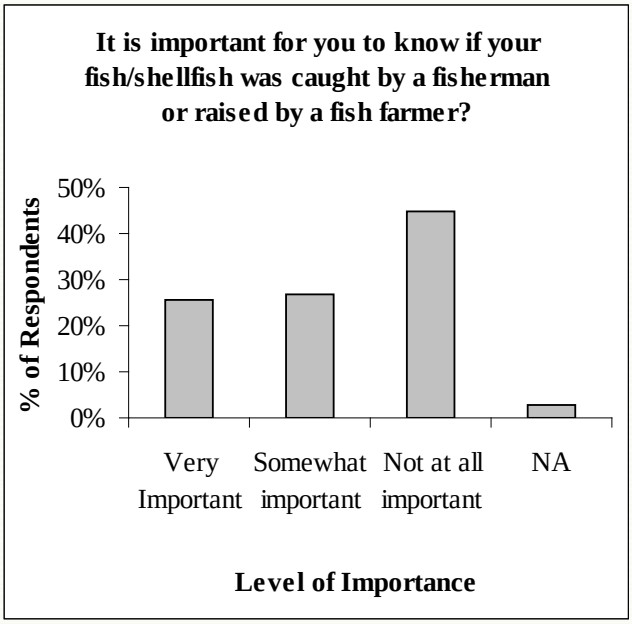
Graph 8



As evident from graph 6, a large proportion of residents eat fish in general, but few report that the fish or shellfish they eat are cultivated in fish farms. As such, many people believe they are eating wild products when they are very likely consuming farmed items. This is particularly evident with mussels and Atlantic salmon, both of which are derived almost entirely from fish farms. Although some of the respondents eating these farmed products may be unsupportive of fish farming in general due to any of the reasons stated in Graph 7, the fact that they are already consuming these items regularly may surprise them, and make them more likely to support fish farming in the future.

In summary, it appears that further education is warranted to demonstrate to residents that farmed seafood products are regularly consumed by many Nova Scotians, and to make them aware of what species are commonly farmed, and from where most of their fish and shellfish products are generally derived. With 52% of respondents feeling it is at least somewhat important to know whether their fish originates from (Graph 9), it is evident that labelling or packaging indicating the product's source would be appreciated by many Nova Scotians.

Graph 9



3.3.3 Factors Influencing the Consumption of Products from Fish Farms

There are several factors that influence the consumption of fish and shellfish from aquaculture operations. In terms of the location of fish farms, almost three-quarters of respondents (72%) indicated that they would be more likely to consume seafood from a local fish farm than one from further away, while only 18% felt the proximity of the farm made no difference. The relationship between eating farmed products and having a local aquaculture operation in the community was found to be significant, with 48% of those who have local fish farms reporting that they eat farmed fish products, in comparison to only 33% of those who do not have fish farms in their communities. This may be due to communities with fish farms having more information in the local newspaper or local people being more likely to know someone in the industry. In addition, some fish farm operators are known to sponsor local community events, either financially or by donating product. Such exposure enables people in the community to have more contact with the fish farming industry, thereby becoming more familiar with aquaculture operations.

A significant relationship also exists between residents' familiarity of fish farming, and the consuming of products specifically from fish farms. In this case, 84% of those who report that they do eat products from fish farms are familiar with aquaculture practices, compared to only 16% who, although they eat fish farm products, are not familiar with the industry. This significant relationship however, appears to only exist between familiarity and the consumption of farmed Atlantic salmon, while there were no strong correlations between awareness and the eating of other farmed products, including Pacific salmon, scallops, clams, oysters, mussels and rainbow trout. As almost all Atlantic salmon is farmed, this significance may be due to these consumers simply making an effort to know more about what they eat and how their fish is raised. This finding indicates that a marketing campaign promoting farmed Atlantic salmon may encourage residents to learn more about farm fishing, and consequently increase their familiarity with the industry. In addition, as consumers of other farmed products are not familiar with aquaculture, they should be particularly targeted during the educational campaign, to further their knowledge on the fish farming industry.

Demographics also play a large role in whether people do or do not eat farmed fish. With regards to gender, 46% of surveyed males report that they eat fish farmed products compared to only 30% of females. Age also significantly corresponds to the consuming of fish farmed products with those in the older age groups eating significantly more farmed products. For instance 47% of those aged 56-65 report that they eat farmed products, compared to only 28% of those aged 18-35 years. This difference may again be due to the younger ages groups having not yet encountered fish farm products or being unaware of what is farmed.

Residents educated to a higher level are more likely to eat farmed fish, with 46% of those with at least some post graduate courses eating farmed products while only 22% of grade school graduates consume these items. Income also plays a factor, as 56% of residents who, as a family earned over $100,000 in 2008, report that they eat farmed products, while 48% of those who earned a combined income of less than $25,000 in 2008 say they do not consume farmed fish or shellfish.

In terms of living areas, 43% of those in coastal communities say they eat farmed fish, compared with only 29% of those who live in cities, towns or villages. This result could be assumed since in these villages, fishing is more often a way of life. One can expect that these individuals would be knowledgeable about the practice and therefore able to state that their fish comes from fish farms, or that they are more willing to eat farmed products since they are aware of the accurate details surrounding the industry.

Those more likely to report that they eat fish farmed products are:

- People with a local fish farm in their community
- People who are familiar with the aquaculture industry (specific to Atlantic salmon)
- People aged 35 to 65 years old
- People with a higher level of education
- People with higher family incomes
- Males
- People in coastal communities

3.4 Respondent Perceptions on Fish Farming

- **People see aquaculture as being important for job creation and local economies.**
- **Residents strongly believe that fish farms should be placed in areas where they do not result in environmental damage, and where they do not interfere with the commercial fishing industry, recreation or scenic views.**
- **On some aquaculture topics, many people are uncertain about their level of agreement.**
- **Education is needed to better inform people.**

Respondent perceptions were gathered on a scale of 1 to 10, with 1 being "Strongly disagree", and the level of agreement progressively increasing until 10 which corresponds with "Strongly agree" (Graph 10). In order to determine the average level of agreement held by these survey respondents, the 'mean' level of agreement was calculated and can be seen alongside each statement (Graph 11). Frequencies were also derived in order that approximate percentages could also be presented. *For the purpose of this report, numbers 1-5 were considered to be aligned with disagreement, while numbers 6-10 correspond with some level of agreement. With these distinctions in mind, the percentages from each level of agreement were aggregated in order to determine the approximate proportion of people who at some level, agreed or disagreed with the statement. It must be noted that in order to provide an accurate representation of perceptions, the 'Don't know' answers were not included within the frequencies counts or the mean calculations, as such, the numbers below represented only those who could provide some level of agreement or disagreement.*

With regards to fish farming being a clean operation that is safe for the environment, more than half of the respondents (63%) felt some level of agreement with this statement, also indicated by a mean of 6.37 (Graph 10). A large proportion of respondents (80%) also felt that fish farming produces high quality food that is safe to eat (mean = 7.29). These findings indicate that people are generally supportive of the aquaculture industry and believe it to produce quality products, however there remains a slight caution regarding the cleanliness of these operations and their possible impacts on the environment.

In terms of fish farming placing negative impacts on the traditional commercial fishery, 69% of respondents disagreed with this statement indicating that most people do not perceive the development of the aquaculture industry to be a large downfall for the commercial fishery. This disagreement however was relatively mild, with a mean of only 4.45, showing that some people may be slightly unsure of aquaculture's impacts. There was however, strong agreement regarding fish farming being necessary to reduce the pressure on wild fish stocks, with 79% of respondents aligning themselves with this statement (mean = 7.27). In addition, there is also a relatively large proportion of respondents (69%) who feel that establishing fish farms in Nova Scotian coastal waters is a good idea (mean = 6.75). As a result, Nova Scotians are aware of the need for fish farms and their benefits for the wild fish stocks, however, although they are somewhat supportive of their development, there is a mild sense of uncertainty about locating them within the province's waters, and their potential impacts on the commercial fishing industry, indicating a need for further education.

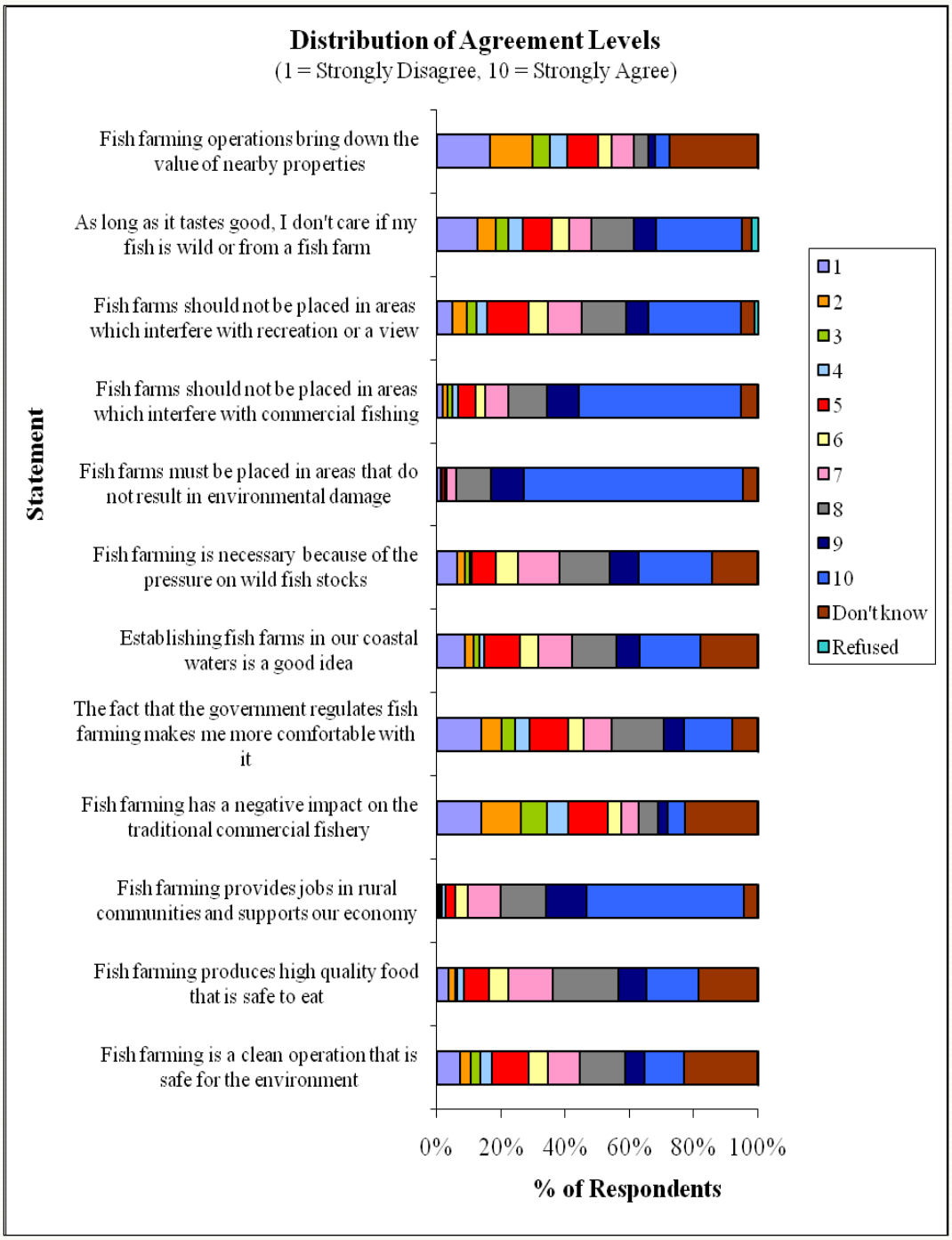
Unfortunately, government regulation of fish farming does not appear to bring much confidence in respondents, with only 55% (mean = 5.91) feeling that these regulations make them somewhat more comfortable with the concept of fish farming. Regardless of these and other reservations, there is some level of agreement (mean = 6.47) among 62% of respondents that as long as their fish tastes good, they are not concerned whether it originates from a fish farm or is caught commercially, indicating an openness towards fish farming concepts and products.

The most consensus among respondents was found with regards to the employment and economical impacts of fish farms, as well as the placement of fish farm operations. In terms of jobs and the economy, almost all respondents (94%) agree (mean = 8.72) that fish farming provides jobs in rural communities and supports local economies. A large amount of agreement was also found with regards to the placement of fish farms, with 97% of respondents (mean = 9.36) agreeing that fish farms need to be placed where no environmental damage will occur, and 87% agreeing that fish farms should be placed in areas where they will not interfere with commercial fishing operations (mean = 8.47). There was also a strong level of agreement that fish farms should not interfere with recreational areas or scenic views (70%, mean = 7.10) and that their placement would not bring down the value of nearby residential areas (70%, mean = 6.06).

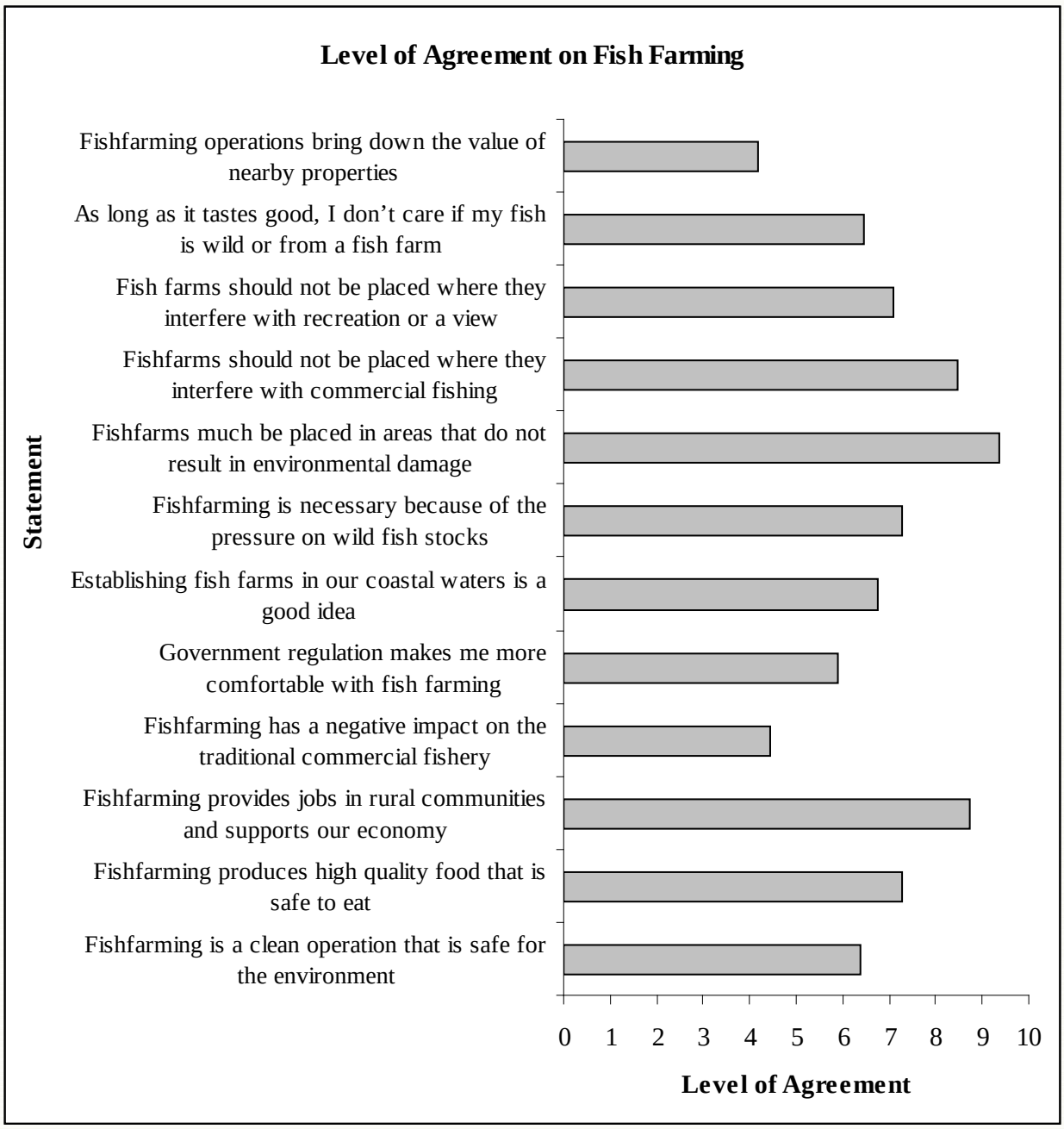
These perceptions indicate that there is a fair level of openness towards fish farming concepts and products, however, not knowing aquaculture's real impacts, makes respondents slightly uncertain about supporting its development, particularly in their communities or within provincial waters. This indicates a need for further education on fish farming, to develop a better level of comfort among Nova Scotians, and replace myths and

negative perceptions with valid and reliable information. These findings also indicate that public support will be better garnered through the careful placement of fish farms in areas where they will not interfere with the commercial fishery, recreation, views or the environment. Support may also be further developed through emphasizing the positive role that community fish farms can play in developing jobs for residents and boosting local economies.

Graph 10

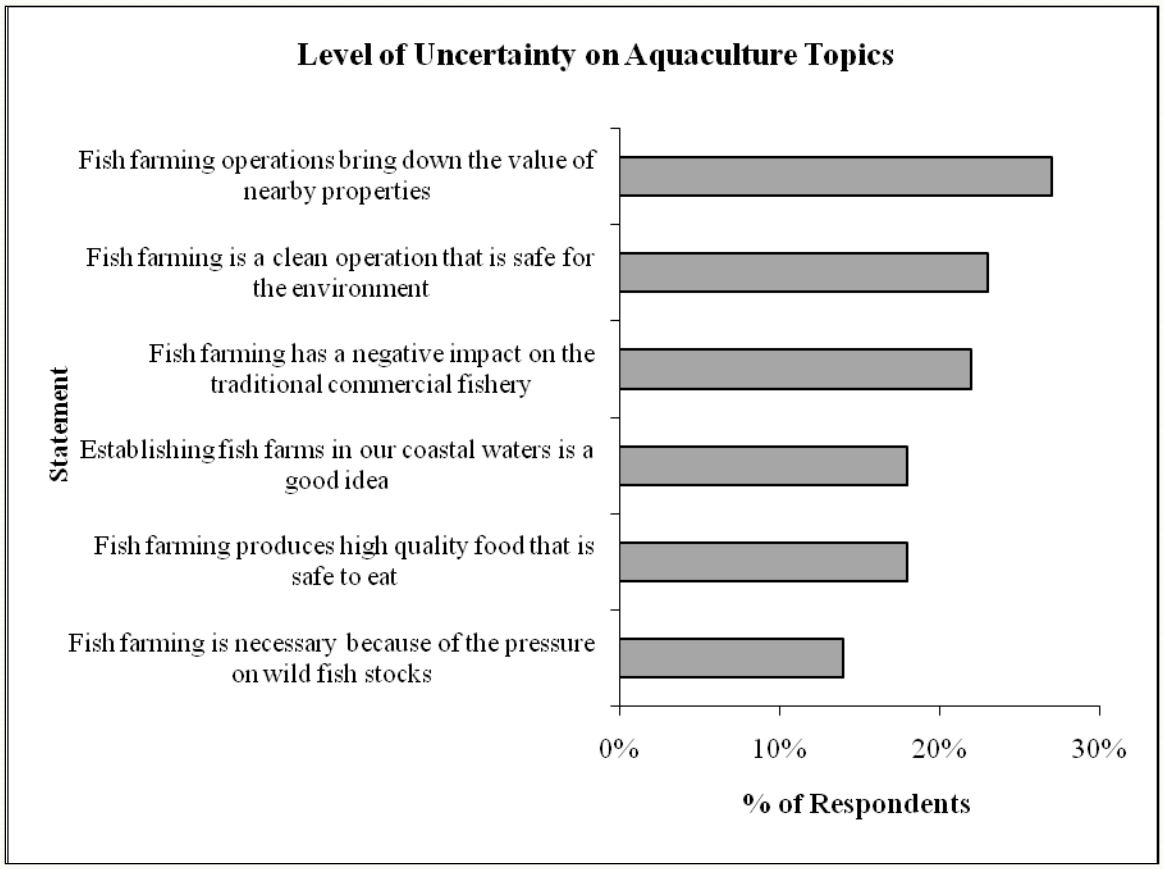


Graph 11



When measuring respondent perceptions it was found that there was a large amount of uncertainty regarding certain topics, with many people, rather than stating a level of agreement, simply chose the option of "Don't know". For instance, 23% were unsure about fish farming's impacts on the environment, and 18% were uncertain about whether fish farming produces high quality food. Graph 12 shows the topics on which there was the most amount of uncertainty, indicating areas which should be targeted during an educational campaign in order to enable people to make educated decisions regarding their feelings towards fish farming practices.

Graph 12



3.5 Sources of Respondents' Fish Farming Information

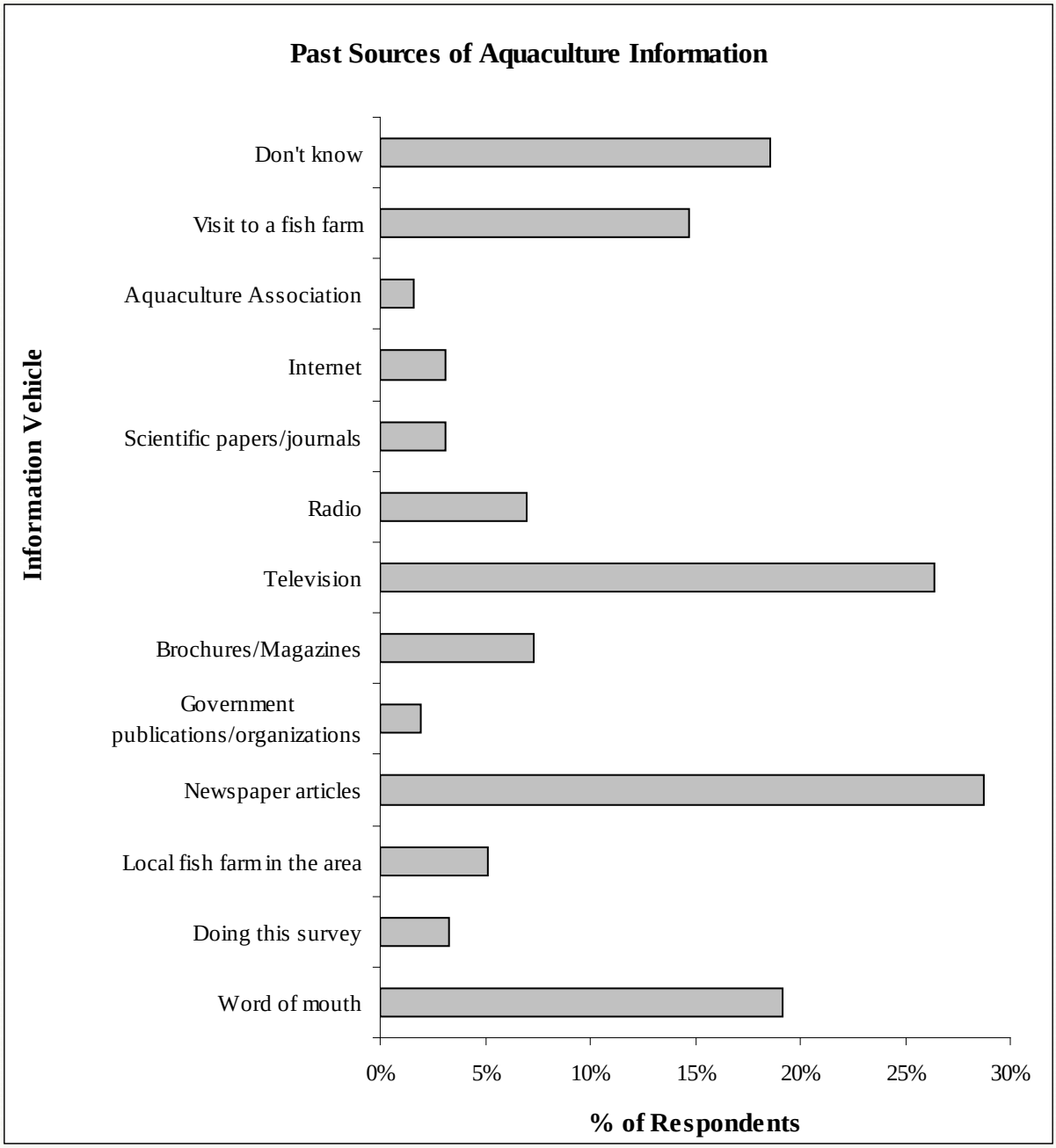
- **Future information would be best provided in a convenient manner (television, radio, newspaper) and derived from expert sources, such as scientific journals, fish farms or aquaculture associations.**

As seen in Graph 13, which presents the percentages based on the total number of survey respondents, the most popular sources of fish farming information in the past have been newspaper articles (29%) and television stories (26%), followed by word of mouth (19%) and a visit to a fish farm (15%). Many people (19%) were not able to remember from where they had received their information, indicating a need for more effective and memorable marketing and informational campaigns in future.

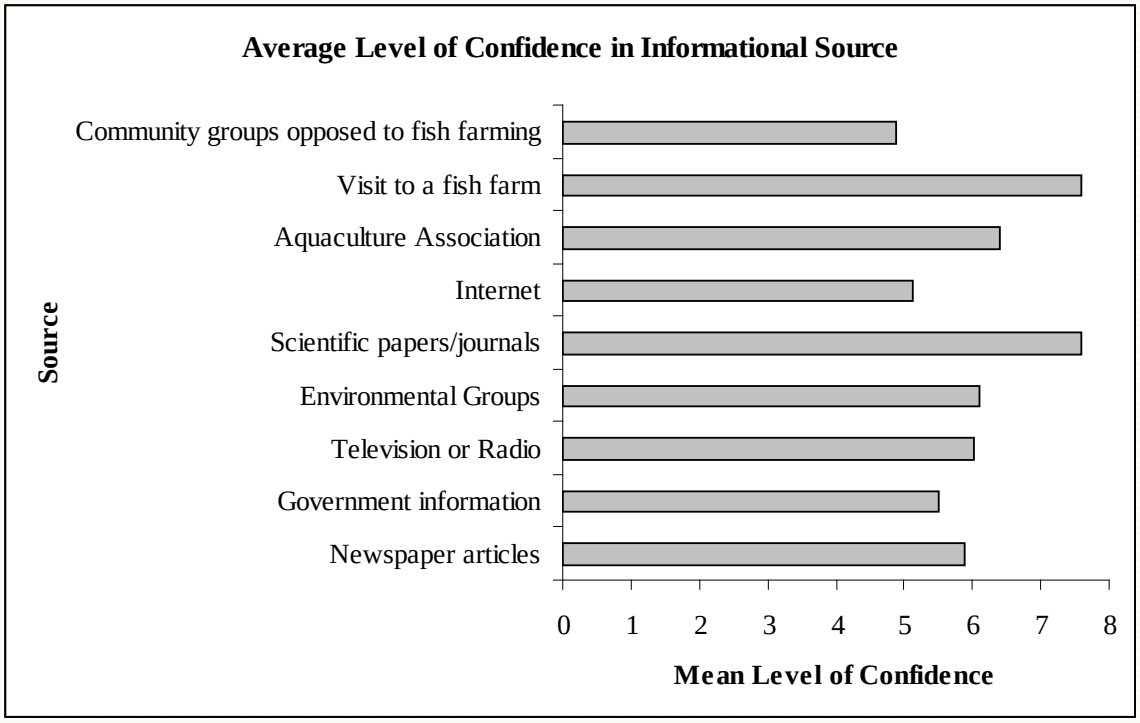
Respondents' confidence in these information sources was recorded on a scale of 1 to 10, with 1 equalling "No confidence at all" and 10 being "Fully confident". Through calculating the average level of confidence, it is evident that respondents in general have little confidence in most informational sources (Graph 14). The most trusted sources of information include a visit to a fish farm (mean = 7.59), and scientific papers and journals (mean = 7.60), however, as these numbers indicate, there is still a fair amount of uncertainty

regarding the information they provide. Other sources in which individuals are less confident include the aquaculture association (mean = 6.41), the internet (mean = 5.12), environmental groups (mean = 6.10), television or radio (mean = 6.03), newspapers (mean = 5.89), government information (mean = 5.51) and lastly community groups opposed to fish farming (mean = 4.88).

Graph 13

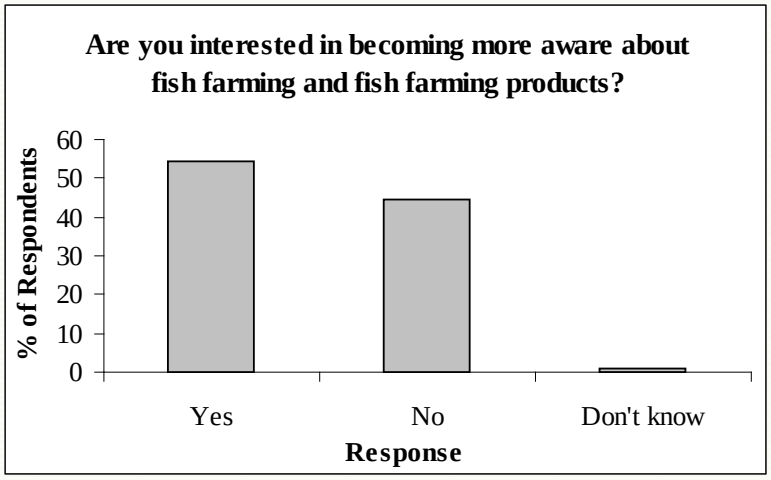


Graph 14

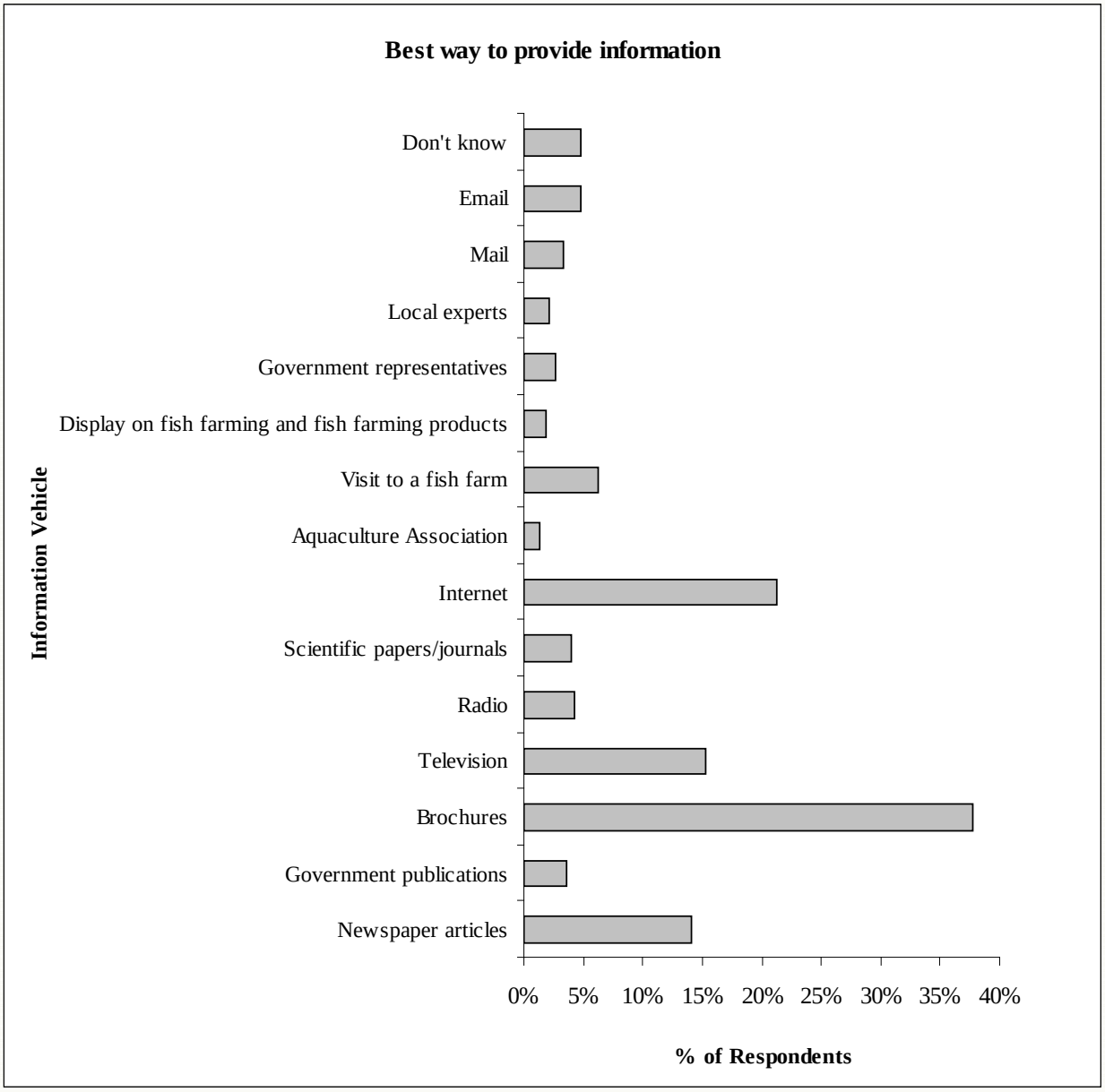


As over half of respondents (55%) indicated that they would be interested in learning more about fish farming (Graph 15), further information on aquaculture should be provided to residents. Moving forward (Graph 16), people are most receptive to gaining information through brochures (38%), the Internet (21%) or newspaper articles (14%), while, less popular suggestions included visits to a fish farm (6%), email (5%) and radio (4%).

Graph 15



Graph 16



As mentioned, respondents do not have a high level of confidence in many of these informational sources, which should be considered when choosing communications vehicles. Convenience appears to be the key, as brochures, the internet and newspapers are for most people, easily accessible forms of information, while gaining access to scientific journals or a fish farm requires considerable more effort. As such, future information should combine the important aspects of validity and convenience to enable people to gain access to aquaculture information through their preferred forms, while still being able to trust the content provided. One option is to incorporate expert-written articles, similar to those submitted to scientific journals, into convenient information sources such as newspapers or the internet. Since word of mouth is also a recognized information source, another option may include face-to-face time with aquaculture experts; thereby combining the high

confidence of scientific information with the convenience of the 'word of mouth' method. This could be accomplished through workshops, community events, and displays such as the touch tank.

In addition, since many people in the study could not remember from where they had received their information, the educational campaign must be engaging, appealing and effective, in order to leave a lasting impression upon Nova Scotians that will more efficiently bring about a change in attitudes and perceptions.

4 Conclusion

The survey has determined that Nova Scotians are generally comfortable with aquaculture. They have little concern about environmental impacts, and do not believe that the industry conflicts with other uses of the coastal zone. The industry is seen to produce a clean product that is good to eat, and most people feel that aquaculture provides important economic development opportunities to rural coastal areas.

There are a significant number of people who report that they are not familiar with the industry, however, and the research has indicated that there is an awareness and knowledge gap that should be addressed.

It is noted that the telephone survey is a random sample of Nova Scotians and the questions do not address particular aquaculture operations or geographic areas. The survey is designed to determine general broad-based awareness, knowledge and perceptions of the industry at a macro level. It is not designed to determine the perceptions of particular operations in particular communities.

Further project research in the form of focus groups and interviews explores the perceptions at a micro level, in communities with existing aquaculture operations.

Appendix A – Respondent FSA Codes

FSA	Frequency	FSA	Frequency
B5A	1	B1X	3
B0C	11	B1Y	6
B0E	55	B2A	10
B0F	1	B2G	7
B0H	3	B2H	3
B0J	58	B2N	35
B0K	34	B2R	1
B0L	3	B2S	6
B0M	18	B2T	12
B0N	41	B2Y	1
B0P	35	B3A	2
B0R	8	B3B	1
B0S	24	B3E	7
B0T	35	B3G	1
B0V	13	B3T	7
B0W	43	B3V	2
B0X	1	B3Z	14
B1A	15	B4A	1
B1B	4	B4H	3
B1C	5	B4N	18
B1H	10	B4P	12
B1J	3	B4V	23
B1K	5	B5A	21
B1N	1	B6L	21
B1T	1	B9A	7
B1V	8	B0T	1
B1W	3		

Appendix B – Survey Data

Public Confidence in Aquaculture in Nova Scotia
Provincial Survey

April, 2009

Introduction

Good morning/afternoon/evening. My name is _____ and we are conducting a survey to determine Nova Scotian's views about aquaculture, which is sometimes referred to as fish-farming. This is not a marketing survey.

We are speaking with people who are at least 18 years of age or older. Participation is voluntary and all responses are confidential. The survey will take approximately 10 minutes to complete.

Respondent Screening

A. May I please speak to the person in your household who is at least 18 years old, and who has had the most recent birthday?

   Yes (CONTINUE)
   No – Not available (REQUEST CALL BACK)
   No – No eligible respondent (THANK AND TERMINATE)

B. Do you now or have you ever owned, operated, or worked at a fish-farming operation?
   a. Yes (THANK AND TERMINATE)
   b. No (CONTINUE)

(IF PERSON SELECTED IS NOT AVAILABLE DURING INTERVIEW PERIOD, ASK FOR PERSON WITH NEXT MOST RECENT BIRTHDAY)

Experience

4. Are you familiar with fish-farming operations?
   a. Y
   b. N
   c. DK/NA
   d. Refused

Are you familiar with fish-farming operations?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	463	68.8	69.0	69.0
	No	208	30.9	31.0	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

5. Do you know anyone working in a fish-farming operation?
   a. Y
   b. N
   c. DK/NA
   d. Refused

Do you know anyone working in a fish-farming operation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	112	16.6	16.6	16.6
	No	557	82.8	82.8	99.4
	DK/NA	4	.6	.6	100.0
	Total	673	100.0	100.0	

6. Have you ever seen or visited a fish-farming operation?
   a. Y
   b. N (SKIP to 9)
   c. DK/NA
   d. Refused

Have you ever seen or visited a fish-farming operation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	328	48.7	48.8	48.8
	No	339	50.4	50.4	99.3
	DK/NA	5	.7	.7	100.0
	Total	672	99.9	100.0	
Missing	System	1	.1		
Total		673	100.0		

7. Is there a fish-farming operation currently in your community, or planned or proposed for the future?
   a. Y
   b. N
   c. DK/NA
   d. Refused

Is there a fish-farming operation currently in your community, or planned or proposed for the future?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	145	21.5	21.5	21.5
	No	461	68.5	68.5	90.0
	DK/NA	67	10.0	10.0	100.0

Is there a fish-farming operation currently in your community, or planned or proposed for the future?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	145	21.5	21.5	21.5
	No	461	68.5	68.5	90.0
	DK/NA	67	10.0	10.0	100.0
	Total	673	100.0	100.0	

8. Do you now or have you ever worked in the commercial fishery?
   a. Y
   b. N
   c. DK/NA
   d. Refused

Do you now or have you ever worked in the commercial fishery?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	140	20.8	20.8	20.8
	No	533	79.2	79.2	100.0
	Total	673	100.0	100.0	

9. Do you have family members or friends who work in the commercial fishery?
   a. Y
   b. N
   c. DK/NA
   d. Refused

Do you have family members or friends who work in the commercial fishery?

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Yes	300	44.6	44.7	44.7
	No	370	55.0	55.1	99.9
	DK/NA	1	.1	.1	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

Perception

10. Do you eat fresh shellfish, such as mussels, clams or oysters? (READ LIST)
    a. Y (SKIP to 9)
    b. N
    c. DK/NA

Do you eat fresh shellfish, such as mussels, clams or oysters?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	503	74.7	74.7	74.7
	No	170	25.3	25.3	100.0
	Total	673	100.0	100.0	

11. Why not? (DO NOT READ) (SKIP TO 10)
    a. Don't like it
    b. Allergies
    c. Not part of diet/vegetarian

d. Ethical reasons
e. Other _____
f. NA

Why not?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		502	74.6	74.6	74.6
	Don't like it	111	16.5	16.5	91.1
	Allergies	30	4.5	4.5	95.5
	Not part of diet/vegetarian	12	1.8	1.8	97.3
	Ethical Reasons	2	.3	.3	97.6
	NA	4	.6	.6	98.2
	expensive	1	.1	.1	98.4
	lack of availability	1	.1	.1	98.5
	No real trust in shell fish	1	.1	.1	98.7
	not affordable	1	.1	.1	98.8
	not available	1	.1	.1	99.0
	not fresh, just cans	1	.1	.1	99.1
	To much pollution	1	.1	.1	99.3
	Too costly	2	.3	.3	99.6
	Too much contamination	1	.1	.1	99.7
	Unclean bottom dwelling creature. Serves a better purpose on the ocean floor.	1	.1	.1	99.9
	years ago, we we're told they we're poison.	1	.1	.1	100.0
	Total	673	100.0	100.0	

12. I am going to read you a list of shellfish, for each one please answer yes if you eat it, and no if do you not. (READ LIST AND RECORD YES OR NO)

a. Mussels

Do you eat Mussels?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	403	59.9	78.7	78.7
	No	109	16.2	21.3	100.0
	Total	512	76.1	100.0	
Missing	System	161	23.9		
Total		673	100.0		

b. Clams

Do you eat Clams?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	407	60.5	79.6	79.6
	No	104	15.5	20.4	100.0
	Total	511	75.9	100.0	
Missing	System	162	24.1		
Total		673	100.0		

c. Oysters

Do you eat Oysters?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	207	30.8	40.4	40.4
	No	305	45.3	59.6	100.0
	Total	512	76.1	100.0	
Missing	System	161	23.9		
Total		673	100.0		

d. Scallops

Do you eat Scallops?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	483	71.8	94.3	94.3
	No	29	4.3	5.7	100.0
	Total	512	76.1	100.0	
Missing	System	161	23.9		
Total		673	100.0		

13. Do you eat fish?
    a. Y (SKIP to 12)
    b. N
    c. DK/NA

Do you eat fish?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	641	95.2	95.2	95.2
	No	31	4.6	4.6	99.9
	DK/NA	1	.1	.1	100.0
	Total	673	100.0	100.0	

14. Why not? (DO NOT READ) (SKIP TO 13)
    a. Don't like it
    b. Allergies
    c. Not part of diet/vegetarian
    d. Ethical reasons
    e. Other _____
    f. NA

Why Not?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Don't like it	20	3.0	60.6	60.6
	Allergies	5	.7	15.2	75.8
	Not part of diet/vegetarian	5	.7	15.2	90.9
	Other	3	.4	9.1	100.0
	Total	33	4.9	100.0	
Missing	System	640	95.1		
Total		673	100.0		

15. I am going to read you a list of fish, for each one please answer yes if you eat it, and no if do you not. (READ LIST AND RECORD YES OR NO)
    a. Halibut

Do you eat Halibut?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	539	80.1	84.1	84.1
	No	102	15.2	15.9	100.0
	Total	641	95.2	100.0	
Missing	System	32	4.8		
Total		673	100.0		

    b. Atlantic Salmon

Do you eat Atlantic Salmon?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	500	74.3	78.0	78.0
	No	141	21.0	22.0	100.0
	Total	641	95.2	100.0	
Missing	System	32	4.8		
Total		673	100.0		

c. Pacific Salmon

Do you eat Pacific Salmon?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	371	55.1	57.9	57.9
	No	270	40.1	42.1	100.0
	Total	641	95.2	100.0	
Missing	System	32	4.8		
Total		673	100.0		

d. Haddock

Do you eat Haddock?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	627	93.2	97.7	97.7
	No	15	2.2	2.3	100.0
	Total	642	95.4	100.0	
Missing	System	31	4.6		
Total		673	100.0		

e. Rainbow Trout

Do you eat Rainbow Trout?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	413	61.4	64.3	64.3
	No	229	34.0	35.7	100.0
	Total	642	95.4	100.0	
Missing	System	31	4.6		
Total		673	100.0		

f. Cod

Do you eat Cod?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	423	62.9	65.9	65.9
	No	219	32.5	34.1	100.0
	Total	642	95.4	100.0	
Missing	System	31	4.6		
Total		673	100.0		

16. Do you eat products from fish farming operations?
    a. Y
    b. N (SKIP to 15)
    c. DK/NA

Do you eat products from fish farming operations?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	234	34.8	36.3	36.3
	No	232	34.5	36.0	72.4
	DK/NA	178	26.4	27.6	100.0
	Total	644	95.7	100.0	
Missing	System	29	4.3		
Total		673	100.0		

17. I am going to read you a list of farmed fish products, for each one please answer yes if you eat these products from farms, and no if do you not. (READ LIST AND RECORD YES, NO or DON'T KNOW)
    a. Atlantic Salmon

Do you eat farmed Atlantic Salmon?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	166	24.7	70.6	70.6
	No	31	4.6	13.2	83.8
	DK/NA	38	5.6	16.2	100.0
	Total	235	34.9	100.0	
Missing	System	438	65.1		
Total		673	100.0		

    b. Pacific Salmon

Do you eat farmed Pacific Salmon?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	50	7.4	21.4	21.4
	No	110	16.3	47.0	68.4
	DK/NA	74	11.0	31.6	100.0
	Total	234	34.8	100.0	
Missing	System	439	65.2		
Total		673	100.0		

c. Rainbow Trout

Do you eat farmed Rainbow Trout?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	86	12.8	36.8	36.8
	No	100	14.9	42.7	79.5
	DK/NA	48	7.1	20.5	100.0
	Total	234	34.8	100.0	
Missing	System	439	65.2		
Total		673	100.0		

d. Mussels

Do you eat farmed Mussels?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	135	20.1	57.9	57.9
	No	54	8.0	23.2	81.1
	DK/NA	44	6.5	18.9	100.0
	Total	233	34.6	100.0	
Missing	System	440	65.4		
Total		673	100.0		

e. Oysters

Do you eat farmed Oysters?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	34	5.1	14.5	14.5
	No	134	19.9	57.3	71.8
	DK/NA	66	9.8	28.2	100.0
	Total	234	34.8	100.0	
Missing	System	439	65.2		
Total		673	100.0		

f. Clams

Do you eat farmed Clams?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	35	5.2	15.0	15.0
	No	126	18.7	53.8	68.8
	DK/NA	73	10.8	31.2	100.0
	Total	234	34.8	100.0	
Missing	System	439	65.2		
Total		673	100.0		

g. Scallops

Do you eat farmed Scallops?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	34	5.1	14.6	14.6
	No	126	18.7	54.1	68.7
	DK/NA	73	10.8	31.3	100.0
	Total	233	34.6	100.0	
Missing	System	440	65.4		
Total		673	100.0		

18. Are there any reasons why you would not eat fish or shellfish from farming operations? (DO NOT READ LIST)
    a. Don't eat fish or shellfish/allergies
    b. Taste/flavour/texture
    c. Concern for safety
    d. Concern for cleanliness/chemicals/additives
    e. Environmental concerns
    f. Don't like fish farms in communities
    g. Prefer to support commercial fishers
    h. It is not natural
    i. Prefer non-farmed fish
    j. Don't know enough about it
    k. NA
    l. Other _____

Are there any reasons why you would not eat fish or shellfish from farming operations

		Responses		
		N	Percent	Percent of Cases
Reasons Not to Eat Aquaculture Products	Don't eat fish/allergies	24	12.2%	14.4%
	Taste/flavour/texture	28	14.3%	16.8%
	Concern for safety	15	7.7%	9.0%
	Concern for cleanliness/chemicals/additives	41	20.9%	24.6%
	Environmental Concerns	25	12.8%	15.0%
	Don't like fish farms in communities	1	.5%	.6%
	Prefer to support commercial fishers	3	1.5%	1.8%
	It is not natural	13	6.6%	7.8%
	Prefer non-farmed fish	19	9.7%	11.4%
	Don't know enough about it	27	13.8%	16.2%
Total		196	100.0%	117.4%

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	635	94.4	94.4	94.4
	antibiotics	3	.4	.4	94.8
	availability	4	.6	.6	95.4
	bad public relation	1	.1	.1	95.5
	biotoxin accumulation	1	.1	.1	95.7
	Breeding Conditions	8	1.2	1.2	96.9
	Cost	2	.3	.3	97.2
	Diseases	3	.4	.4	97.6

I can smell the feed off the fish	1	.1	.1	97.8
I only buy fish from my dad	1	.1	.1	97.9
just do not like it	1	.1	.1	98.1
just goes to store	1	.1	.1	98.2
just won't eat farmed fish	1	.1	.1	98.4
Lack of control by government	1	.1	.1	98.5
none	4	.6	.6	99.1
not enough labelling on the package to tell	1	.1	.1	99.3
only if there was something on the news about problems	1	.1	.1	99.4
They contaminate the wild salmon if they escape.	1	.1	.1	99.6
They grow too fast.	1	.1	.1	99.7
They think they can make a better fish than God	1	.1	.1	99.9
Would just depend on the farm	1	.1	.1	100.0
Total	673	100.0	100.0	

19. How likely would you be to eat fish or shellfish products from a local fish farm rather than one further away?
    a. Much more likely
    b. Somewhat more likely
    c. Somewhat less likely
    d. Much less likely
    e. Makes no difference
    f. DK/NA

How likely would you be to eat fish or shellfish products from a local fish farm rather than one further away?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Much more likely	342	50.8	51.0	51.0
	Somewhat more likely	139	20.7	20.7	71.7
	Somewhat less likely	2	.3	.3	72.0
	Much less likely	25	3.7	3.7	75.7
	Makes no difference	122	18.1	18.2	93.9
	DK/NA	28	4.2	4.2	98.1
	Don't eat fish or shellfish	13	1.9	1.9	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

20. When you buy fish or shellfish products, either in a grocery store or in a restaurant, do you know if it has been caught by a fisherman or raised by a fish farmer?
    a. Always
    b. Usually
    c. Sometimes
    d. Never
    e. NA
    f. Don’t buy fish or shellfish

When you buy fish or shellfish products, either in a grocery store or in a restaurant, do you know if it has been caught by a fisherman or raised by a fish farmer?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	43	6.4	6.4	6.4
	Usually	88	13.1	13.1	19.6
	Sometimes	96	14.3	14.3	33.9
	Never	349	51.9	52.1	86.0
	NA	70	10.4	10.4	96.4
	Don't buy fish or shellfish	24	3.6	3.6	100.0
	Total	670	99.6	100.0	
Missing	System	3	.4		
Total		673	100.0		

21. How important is it to you that you know if the fish or shellfish was caught by a fisherman or raised by a fish farmer?
    a. Very important
    b. Somewhat important
    c. Not at all important
    d. NA

How important is it to you that you know if the fish or shellfish was caught by a fisherman or raised by a fish farmer?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very important	173	25.7	25.7	25.7
	Somewhat important	181	26.9	26.9	52.7
	Not at all important	300	44.6	44.6	97.3
	NA	18	2.7	2.7	100.0
	Total	672	99.9	100.0	
Missing	System	1	.1		
Total		673	100.0		

22. On a scale of 1 to 10 where 1 is completely disagree and 10 is completely agree, what is your level of agreement on the following statements?
    a. Fish-farming is a clean operation that is safe for the environment

Scale of 1 to 10: Fish-farming is a clean operation that is safe for the environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	49	7.3	7.3	7.3
	2	21	3.1	3.1	10.4
	3	22	3.3	3.3	13.7
	4	23	3.4	3.4	17.1
	5	78	11.6	11.6	28.7
	6	39	5.8	5.8	34.5
	7	68	10.1	10.1	44.6
	8	95	14.1	14.1	58.7
	9	40	5.9	5.9	64.6
	10	83	12.3	12.3	77.0
	Don't Know	154	22.9	22.9	99.9
	Refused	1	.1	.1	100.0
	Total	673	100.0	100.0	

b. Fish-farming produces high quality food that is safe to eat

Scale of 1 to 10: Fish-farming produces high quality food that is safe to eat

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	25	3.7	3.7	3.7
	2	13	1.9	1.9	5.6
	3	4	.6	.6	6.2
	4	14	2.1	2.1	8.3
	5	53	7.9	7.9	16.2
	6	41	6.1	6.1	22.3
	7	92	13.7	13.7	36.0
	8	139	20.7	20.7	56.6
	9	59	8.8	8.8	65.4
	10	108	16.0	16.0	81.4
	Don't Know	124	18.4	18.4	99.9
	Refused	1	.1	.1	100.0
	Total	673	100.0	100.0	

c. Fish-farming provides jobs in rural communities and supports our economy

Scale of 1 to 10: Fish-farming provides jobs in rural communities and supports our economy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	.6	.6	.6
	2	4	.6	.6	1.2
	3	3	.4	.4	1.6
	4	7	1.0	1.0	2.7
	5	21	3.1	3.1	5.8
	6	26	3.9	3.9	9.7
	7	68	10.1	10.1	19.8
	8	96	14.3	14.3	34.1
	9	85	12.6	12.7	46.8
	10	329	48.9	49.0	95.8
	Don't Know	26	3.9	3.9	99.7
	Refused	2	.3	.3	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

d. Fish-farming has a negative impact on the traditional commercial fishery

Scale of 1 to 10: Fish-farming has a negative impact on the traditional commercial fishery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	92	13.7	13.7	13.7
	2	84	12.5	12.5	26.2
	3	55	8.2	8.2	34.4
	4	43	6.4	6.4	40.8
	5	83	12.3	12.4	53.1
	6	30	4.5	4.5	57.6
	7	36	5.3	5.4	62.9
	8	41	6.1	6.1	69.0
	9	19	2.8	2.8	71.9
	10	37	5.5	5.5	77.4
	Don't Know	150	22.3	22.3	99.7
	Refused	2	.3	.3	100.0
	Total	672	99.9	100.0	
Missing	System	1	.1		
Total		673	100.0		

e. The fact that the government regulates fish farming makes me more comfortable with it

Scale of 1 to 10: The fact that the government regulates fish farming makes me more comfortable with it

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	92	13.7	13.7	13.7
	2	43	6.4	6.4	20.1
	3	28	4.2	4.2	24.3
	4	31	4.6	4.6	29.0
	5	81	12.0	12.1	41.0
	6	31	4.6	4.6	45.7
	7	59	8.8	8.8	54.5
	8	108	16.0	16.1	70.6
	9	43	6.4	6.4	77.0
	10	100	14.9	14.9	91.9
	Don't Know	53	7.9	7.9	99.9
	Refused	1	.1	.1	100.0
	Total	670	99.6	100.0	
Missing	System	3	.4		
Total		673	100.0		

f. Establishing fish farms in our coastal waters is a good idea

Scale of 1 to 10: Establishing fish farms in our coastal waters is a good idea

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	59	8.8	8.8	8.8
	2	18	2.7	2.7	11.4
	3	12	1.8	1.8	13.2
	4	11	1.6	1.6	14.9
	5	74	11.0	11.0	25.9
	6	39	5.8	5.8	31.6
	7	70	10.4	10.4	42.1
	8	93	13.8	13.8	55.9
	9	50	7.4	7.4	63.3
	10	127	18.9	18.9	82.2
	Don't Know	119	17.7	17.7	99.9
	Refused	1	.1	.1	100.0
	Total	673	100.0	100.0	

g. Fish-farming is necessary because of the pressure on wild fish stocks

Scale of 1 to 10: Fish-farming is necessary because of the pressure on wild fish stocks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	43	6.4	6.4	6.4
	2	15	2.2	2.2	8.6
	3	10	1.5	1.5	10.1
	4	4	.6	.6	10.7
	5	51	7.6	7.6	18.3
	6	48	7.1	7.1	25.4
	7	86	12.8	12.8	38.2
	8	105	15.6	15.6	53.8
	9	62	9.2	9.2	63.0
	10	154	22.9	22.9	85.9
	Don't Know	94	14.0	14.0	99.9
	Refused	1	.1	.1	100.0
	Total	673	100.0	100.0	

h. Fish-farms must be placed in areas that do not result in environmental damage

Scale of 1 to 10: Fish-farms must be placed in areas that do not result in environmental damage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	1.2	1.2	1.2
	2	1	.1	.1	1.3
	4	2	.3	.3	1.6
	5	6	.9	.9	2.5
	6	4	.6	.6	3.1
	7	19	2.8	2.8	5.9
	8	74	11.0	11.0	16.9
	9	69	10.3	10.3	27.2
	10	458	68.1	68.1	95.2
	Don't Know	30	4.5	4.5	99.7
	Refused	2	.3	.3	100.0
	Total	673	100.0	100.0	

i. Fish-farms should not be placed in areas which interfere with commercial fishing

Scale of 1 to 10: Fish-farms should not be placed in areas which interfere with commercial fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	1.8	1.8	1.8
	2	10	1.5	1.5	3.3
	3	11	1.6	1.6	4.9
	4	11	1.6	1.6	6.5
	5	37	5.5	5.5	12.0
	6	21	3.1	3.1	15.2
	7	48	7.1	7.1	22.3
	8	81	12.0	12.0	34.3
	9	67	10.0	10.0	44.3
	10	339	50.4	50.4	94.7
	Don't Know	34	5.1	5.1	99.7
	Refused	2	.3	.3	100.0
	Total	673	100.0	100.0	

j. Fish-farms should not be placed in areas which interfere with recreation or a view

Scale of 1 to 10: Fish-farms should not be placed in areas which interfere with recreation or a view

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	4.9	4.9	4.9
	2	30	4.5	4.5	9.4
	3	20	3.0	3.0	12.4
	4	22	3.3	3.3	15.7
	5	88	13.1	13.1	28.8
	6	41	6.1	6.1	34.9
	7	71	10.5	10.6	45.5
	8	93	13.8	13.9	59.4
	9	47	7.0	7.0	66.4
	10	196	29.1	29.3	95.7
	Don't Know	28	4.2	4.2	99.9
	Refused	1	.1	.1	100.0
	Total	670	99.6	100.0	
Missing	System	3	.4		
Total		673	100.0		

k. As long as it tastes good, I don't care if my fish is wild or from a fish farm

Scale of 1 to 10: As long as it tastes good, I don't care if my fish is wild or from a fish farm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	86	12.8	12.8	12.8
	2	37	5.5	5.5	18.3
	3	27	4.0	4.0	22.3
	4	31	4.6	4.6	26.9
	5	60	8.9	8.9	35.8
	6	36	5.3	5.3	41.2
	7	46	6.8	6.8	48.0
	8	91	13.5	13.5	61.5
	9	45	6.7	6.7	68.2
	10	180	26.7	26.7	94.9
	Don't Know	22	3.3	3.3	98.2
	Refused	12	1.8	1.8	100.0
	Total	673	100.0	100.0	

l. Fish-farming operations bring down the value of nearby properties

Scale of 1 to 10: Fish-farming operations bring down the value of nearby properties

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	112	16.6	16.6	16.6
	2	88	13.1	13.1	29.7
	3	36	5.3	5.3	35.1
	4	37	5.5	5.5	40.6
	5	66	9.8	9.8	50.4
	6	27	4.0	4.0	54.4
	7	48	7.1	7.1	61.5
	8	29	4.3	4.3	65.8
	9	14	2.1	2.1	67.9
	10	31	4.6	4.6	72.5
	Don't Know	183	27.2	27.2	99.7
	Refused	2	.3	.3	100.0
	Total	673	100.0	100.0	

Information Sources

23. Thinking back to where you have received information on fish-farming, what sources do you remember? (DO NOT READ LIST)
    a. Newspaper articles
    b. Government publications
    c. Brochures
    d. Television story
    e. Radio story
    f. School
    g. Environmental groups
    h. Community groups opposed to a local fish farming proposal
    i. Scientific papers/Journals
    j. Internet
    k. Aquaculture Association
    l. Visit to a fish farm
    m. A display on fish farming and fish products
    n. An interactive aquarium display
    o. Other _____

Thinking back to where you have received information on fish-farming, what sources do you remember?

		Responses		
		N	Percent	Percent of Cases
Information Sources	Newspaper article	193	30.7%	48.0%
	Government Publication	12	1.9%	3.0%
	Brochures	21	3.3%	5.2%
	Television Story	178	28.3%	44.3%
	Radio Story	47	7.5%	11.7%
	School	11	1.8%	2.7%
	Environmental Groups	7	1.1%	1.7%
	Community Groups	6	1.0%	1.5%
	Scientific Papers	21	3.3%	5.2%
	Internet	21	3.3%	5.2%
	Aquaculture Association	11	1.8%	2.7%
	Visit to a Fish Farm	93	14.8%	23.1%

	Display	6	1.0%	1.5%
	Interactive aquarium	1	.2%	.2%
Total		628	100.0%	156.2%

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		434	64.5	64.5	64.5
	A sign	1	.1	.1	64.6
	By doing this survey	22	3.3	3.3	67.9
	Common sense	1	.1	.1	68.1
	Department of Fisheries	3	.4	.4	68.5
	documentaries	1	.1	.1	68.6
	Education	3	.4	.4	69.1
	Fish industry workers	8	1.2	1.2	70.3
	Former owner	1	.1	.1	70.4
	Friend/family	17	2.5	2.5	73.0
	Magazine/Journal	29	4.3	4.3	77.3
	Museum in New Glasgow.	1	.1	.1	77.4
	Owners of a farming property	1	.1	.1	77.6
	packaging	1	.1	.1	77.7
	personal experience taught me more than anything else	1	.1	.1	77.9
	Posters against fish farming.	2	.3	.3	78.2
	Seen/visited a Fish Farm	39	5.8	5.8	84.0
	Through work	6	.9	.9	84.8
	Wide range (oceanographer)	1	.1	.1	85.0
	Word of mouth	101	15.0	15.0	100.0
	Total	673	100.0	100.0	

24. On a scale from 1 to 10 where 1 is not at all confident and 10 is very confident, how confident are you of the following sources of information? (READ LIST)
    a. Newspaper articles

Scale of 1 to 10: Newspaper Articles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	29	4.3	4.3	4.3
	2	19	2.8	2.8	7.1
	3	44	6.5	6.5	13.7
	4	43	6.4	6.4	20.1
	5	173	25.7	25.7	45.8
	6	79	11.7	11.7	57.5
	7	119	17.7	17.7	75.2
	8	81	12.0	12.0	87.2
	9	20	3.0	3.0	90.2
	10	50	7.4	7.4	97.6
	Don't Know	10	1.5	1.5	99.1
	Refused	6	.9	.9	100.0
	Total	673	100.0	100.0	

b. Government information

Scale of 1 to 10: Government Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	55	8.2	8.2	8.2
	2	43	6.4	6.4	14.6
	3	36	5.3	5.3	19.9
	4	54	8.0	8.0	27.9
	5	146	21.7	21.7	49.6
	6	80	11.9	11.9	61.5
	7	94	14.0	14.0	75.5
	8	82	12.2	12.2	87.7
	9	23	3.4	3.4	91.1
	10	41	6.1	6.1	97.2
	Don't Know	12	1.8	1.8	99.0
	Refused	7	1.0	1.0	100.0
	Total	673	100.0	100.0	

c. Television or radio

Scale of 1 to 10: Television or Radio

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	25	3.7	3.7	3.7
	2	24	3.6	3.6	7.3
	3	28	4.2	4.2	11.5
	4	41	6.1	6.1	17.6
	5	163	24.2	24.3	41.8
	6	104	15.5	15.5	57.3
	7	118	17.5	17.6	74.9
	8	84	12.5	12.5	87.4
	9	29	4.3	4.3	91.7
	10	49	7.3	7.3	99.0
	Don't Know	4	.6	.6	99.6
	Refused	3	.4	.4	100.0
	Total	672	99.9	100.0	
Missing	System	1	.1		
Total		673	100.0		

d. Environmental groups

Scale of 1 to 10: Environmental Groups

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	4.9	4.9	4.9
	2	30	4.5	4.5	9.4
	3	30	4.5	4.5	13.8
	4	44	6.5	6.5	20.4
	5	130	19.3	19.3	39.7
	6	67	10.0	10.0	49.6
	7	111	16.5	16.5	66.1
	8	107	15.9	15.9	82.0
	9	41	6.1	6.1	88.1
	10	53	7.9	7.9	96.0
	Don't Know	25	3.7	3.7	99.7
	Refused	2	.3	.3	100.0
	Total	673	100.0	100.0	

e. Community groups opposed to local fish farming proposals

Scale of 1 to 10: Community groups opposed to local fish farming proposals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	65	9.7	9.7	9.7
	2	59	8.8	8.8	18.4
	3	54	8.0	8.0	26.4
	4	53	7.9	7.9	34.3
	5	166	24.7	24.7	59.0
	6	63	9.4	9.4	68.4
	7	58	8.6	8.6	77.0
	8	40	5.9	5.9	82.9
	9	23	3.4	3.4	86.3
	10	27	4.0	4.0	90.3
	Don't Know	62	9.2	9.2	99.6
	Refused	3	.4	.4	100.0
	Total	673	100.0	100.0	

f. Scientific papers/journals

Scale of 1 to 10: Scientific papers/journals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	2.2	2.2	2.2
	2	12	1.8	1.8	4.0
	3	9	1.3	1.3	5.4
	4	14	2.1	2.1	7.4
	5	58	8.6	8.6	16.1
	6	39	5.8	5.8	21.9
	7	79	11.7	11.8	33.6
	8	163	24.2	24.3	57.9
	9	116	17.2	17.3	75.1
	10	120	17.8	17.9	93.0
	Don't Know	43	6.4	6.4	99.4
	Refused	4	.6	.6	100.0
	Total	672	99.9	100.0	
Missing	System	1	.1		
Total		673	100.0		

g. Internet

Scale of 1 to 10: Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	56	8.3	8.3	8.3
	2	36	5.3	5.3	13.7
	3	28	4.2	4.2	17.8
	4	42	6.2	6.2	24.1
	5	154	22.9	22.9	47.0
	6	62	9.2	9.2	56.2
	7	58	8.6	8.6	64.8
	8	46	6.8	6.8	71.6
	9	14	2.1	2.1	73.7
	10	24	3.6	3.6	77.3
	Don't Know	79	11.7	11.7	89.0
	Refused	74	11.0	11.0	100.0
	Total	673	100.0	100.0	

h. Aquaculture Association

Scale of 1 to 10: Aquaculture Association

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	35	5.2	5.2	5.2
	2	20	3.0	3.0	8.2
	3	18	2.7	2.7	10.9
	4	37	5.5	5.5	16.4
	5	97	14.4	14.5	30.8
	6	71	10.5	10.6	41.4
	7	108	16.0	16.1	57.5
	8	98	14.6	14.6	72.1
	9	58	8.6	8.6	80.8
	10	63	9.4	9.4	90.2
	Don't Know	61	9.1	9.1	99.3
	Refused	5	.7	.7	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

i. Visit to a fish farm

Scale of 1 to 10: Visit to a fish farm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	3.4	3.4	3.4
	2	9	1.3	1.3	4.8
	3	14	2.1	2.1	6.9
	4	13	1.9	1.9	8.8
	5	65	9.7	9.7	18.5
	6	30	4.5	4.5	23.0
	7	91	13.5	13.6	36.5
	8	125	18.6	18.6	55.1
	9	71	10.5	10.6	65.7
	10	178	26.4	26.5	92.3
	Don't Know	43	6.4	6.4	98.7
	Refused	9	1.3	1.3	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

25. Are you interested in becoming more aware about fish farming and fish farm products?
    a. Yes
    b. No
    c. DK/NA

Are you interested in becoming more aware about fish farming and fish farm products?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	365	54.2	54.5	54.5
	No	298	44.3	44.5	99.0
	DK/NA	7	1.0	1.0	100.0
	Total	670	99.6	100.0	
Missing	System	3	.4		
Total		673	100.0		

26. What is the best way to provide info to you on fish farming and fish farm products? (DO NOT READ LIST)
    a. Newspaper articles
    b. Government publications
    c. Brochures
    d. Television story
    e. Government representatives
    f. Radio story
    g. School
    h. Environmental groups
    i. Community groups opposed to local fish farming proposals
    j. Scientific papers/journals
    k. Internet
    l. Aquaculture Association
    m. Visit to a fish farm
    n. A display on fish farming and fish products
    o. An interactive aquarium display
    p. Other _____

What is the best way to provide info to you on fish farming and fish farm products?

		Responses		
		N	Percent	Percent of Cases
Best Information Sources	Newspaper	97	12.6%	17.3%
	Government Publication	24	3.1%	4.3%
	Brochures	254	33.0%	45.4%
	Television	99	12.9%	17.7%
	Government Representatives	18	2.3%	3.2%
	Radio Story	28	3.6%	5.0%
	School	5	.6%	.9%
	Environmental Groups	5	.6%	.9%
	Community Groups	6	.8%	1.1%
	Scientific Papers	27	3.5%	4.8%
	Internet	141	18.3%	25.2%
	Aquaculture Association	9	1.2%	1.6%
	Visit to fish farm	42	5.5%	7.5%
	A display	12	1.6%	2.1%
	Interactive Aquarium	3	.4%	.5%
Total		770	100.0%	137.5%

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		544	80.8	80.8	80.8
	Better labelling	2	.3	.3	81.1
	Books	5	.7	.7	81.9
	Community Meetings	3	.4	.4	82.3

	documentaries	2	.3	.3	82.6
	Don't know	30	4.5	4.5	87.1
	E-mail	32	4.8	4.8	91.8
	Grocery Store	4	.6	.6	92.4
	I will do my own research.	1	.1	.1	92.6
	investigative journalism	1	.1	.1	92.7
	Local advertising.	1	.1	.1	92.9
	Magazines	3	.4	.4	93.3
	mail it to me	22	3.3	3.3	96.6
	Make videos and send them out.	1	.1	.1	96.7
	Making tours available to local fish farms	1	.1	.1	96.9
	more phone calls	1	.1	.1	97.0
	Newspaper ad.	1	.1	.1	97.2
	RSS Feed on the internet.	1	.1	.1	97.3
	Someone who is informed	2	.3	.3	97.6
	Talk to an expert	3	.4	.4	98.1
	Talk to someone in the industry	3	.4	.4	98.5
	To be made available when I want it.	1	.1	.1	98.7
	TV ads	1	.1	.1	98.8
	Website	2	.3	.3	99.1
	Word of mouth	6	.9	.9	100.0
	Total	673	100.0	100.0	

Demographics

And, now I'd like to ask you a few final questions for statistical purposes only. Your answers to these questions will be kept confidential.

27. Which of the following best describes where you live?
    - City
    - Town or village
    - Rural (outside a city, town or village)
    - Coastal community
    - Other _____

Which of the following best describes where you live?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	City	3	.4	.4	.4
	Town or village	236	35.1	35.1	35.5
	Rural	246	36.6	36.6	72.1
	Coastal Community	188	27.9	27.9	100.0
	Total	673	100.0	100.0	

28. What is your postal code?
    a. _____

29. How many months of the year do you reside in Nova Scotia?
    a. _____

How many months of the year do you reside in Nova Scotia?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	.1	.1	.1
	3	2	.3	.3	.4
	4	1	.1	.1	.6
	5	1	.1	.1	.7
	6	5	.7	.7	1.5
	7	5	.7	.7	2.2
	8	2	.3	.3	2.5
	9	4	.6	.6	3.1
	10	4	.6	.6	3.7
	11	9	1.3	1.3	5.1
	12	634	94.2	94.9	100.0
	Total	668	99.3	100.0	
Missing	System	5	.7		
Total		673	100.0		

30. How many years have you lived in Nova Scotia?
    a. _____ (If more than 5 years, SKIP to q. 29)

31. Where did you live prior to moving to Nova Scotia? (RECORD PROVINCE OR COUNTRY IF NOT CANADA) _____

How many years have you lived in Nova Scotia?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than 5 years	643	95.5	100.0	100.0
Missing	System	30	4.5		
Total		673	100.0		

Where did you live prior to moving to Nova Scotia?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		649	96.4	96.4	96.4
	Alberta	1	.1	.1	96.6
	BC	1	.1	.1	96.7
	Calgary	1	.1	.1	96.9
	Montreal	2	.3	.3	97.2
	New Brunswick	1	.1	.1	97.3
	Ontario	8	1.2	1.2	98.5
	P.E.I.	1	.1	.1	98.7
	Philippines	1	.1	.1	98.8
	Quebec	2	.3	.3	99.1
	Refused	2	.3	.3	99.4

	Switzerland	1	.1	.1	99.6
	Taiwan	1	.1	.1	99.7
	The United Kingdom	1	.1	.1	99.9
	Western Canada	1	.1	.1	100.0
	Total	673	100.0	100.0	

32. I am going to read some age groups, please indicate which one you fall into.
    a. 18 -25
    b. 26-35
    c. 36-45
    d. 46-55
    e. 56-65
    f. 66 or older
    g. Refused

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	23	3.4	3.4	3.4
	26-35	64	9.5	9.5	12.9
	36-45	95	14.1	14.1	27.1
	46-55	158	23.5	23.5	50.6
	56-65	170	25.3	25.3	75.9
	66 or older	156	23.2	23.2	99.1
	Refused	6	.9	.9	100.0
	Total	672	99.9	100.0	
Missing	System	1	.1		
Total		673	100.0		

33. What is the highest level of education that you have reached?
    a. Some Grade School
    b. High School Graduate
    c. Some College or University
    d. College or University Graduate
    e. Some Graduate Studies
    f. Post-Graduate Degree
    g. Refused

What is the highest level of education that you have reached?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some Grade School	127	18.9	18.9	18.9
	High School Graduate	165	24.5	24.6	43.5
	Some College or University	100	14.9	14.9	58.4
	College or University Graduate	234	34.8	34.9	93.3
	Some Graduate Studies	11	1.6	1.6	94.9
	Post-Graduate Studies	26	3.9	3.9	98.8
	Refused	8	1.2	1.2	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

34. For statistical purposes only, we would like information on your 2008 household income. Please stop me when I come to your category for total household income in 2008 before taxes.
    a. Less than $25,000
    b. Between $25,000 and $50,000
    c. $50,001 to $75,000
    d. $75,001 to $100,000
    e. More than $100,000
    f. Refused

Household Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than $25,000	69	10.3	10.3	10.3
	Between $25,000 and $50,000	122	18.1	18.2	28.5
	$50,001 to $75,000	91	13.5	13.6	42.0
	$75,001 to $100,000	47	7.0	7.0	49.0
	More than $100,000	44	6.5	6.6	55.6
	Refused	262	38.9	39.0	94.6
	DK	36	5.3	5.4	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

35. Gender (not asked)

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	261	38.8	38.9	38.9
	Female	410	60.9	61.1	100.0
	Total	671	99.7	100.0	
Missing	System	2	.3		
Total		673	100.0		

This completes the survey. In case my supervisor would like to verify that I conducted this interview, may I have your first name only.

_____

Thank you for your time and have a great day.