



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

New Jersey Agricultural Experiment Station

P-02275-2-06

June 2006

Consumer Perceptions and Preferences for Organic Aquatic Products: Results from the Telephone Survey

**Linda J. O'Dierno
Ramu Govindasamy
Venkata Puduri
Joseph J. Myers
Sho Islam**



THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Fish & Seafood Program

**PO Box 330
Trenton, NJ 08625-0330
(609) 984-6757
FAX: (609) 633-7229**

**Department of Agricultural,
Food and Resource Economics**

**55 Dudley Road
New Brunswick, NJ 08901-8520
(732) 932-9155 ext.254
FAX: (732) 932-8887**

Linda J. O'Dierno, Coordinator, Fish & Seafood Development, New Jersey Department of Agriculture, Trenton; Dr. Govindasamy is Associate Professor, Department of Agricultural, Food and Resource Economics, Rutgers University, New Brunswick, New Jersey; Venkata Puduri is a Postdoctoral Associate, Department of Agricultural, Food and Resource Economics, Rutgers University, New Brunswick, New Jersey; Joseph J. Myers, Aquaculture Development Specialist Fish & Seafood Development, Office of Aquaculture Coordination, New Jersey Department of Agriculture, Trenton; and Shofiul Islam Business Development Associate, Food Innovation Centre, Rutgers University,

Acknowledgements

The authors would like to thank the following individuals for their assistance in providing direction and support for this project: Mr. Gary Jensen of USDA, Mr. Robert Collette of the National Fisheries Institute, Mr. George Lockwood, Mr. Richard Nelson of Silvercup Feeds, Ms. Deborah Brister of the University of Minnesota, Mr. William Carroll of Gleneagles Inc., Mr. Robert Rheault of Moonstone Oysters, Ms. Robin Downey of the Pacific Coast Shellfish Growers Association, Mr. Sherman Wilhelm of the Florida Department of Agriculture and Consumer Services.

Funding for this project was matched with Federal funds under the Federal-State Marketing Improvement Program of the Agricultural Marketing Service, U.S. Department of Agriculture Grant # 12-25-G-0420.

Table of Contents

Acknowledgements.....	i
Table of Contents.....	ii
List of Tables.....	iii
List of Tables (Contd.).....	iv
List of Figures.....	v
List of figures (Contd.).....	vi
Executive Summary.....	vii
Consumer Perceptions.....	x
Introduction.....	1
Research Objectives.....	5
Methodology.....	6
Survey Results.....	9
Demographics.....	9
Reasons for Consuming Seafood.....	10
Factors/Information that would induce consumer to purchase more seafood.....	11
Seafood Inspection.....	13
Country of Origin Labeling.....	13
Eco-Labeling.....	16
Seafood and Health.....	16
Farm-Raised Seafood.....	18
Purchase Patterns.....	18
Species Specific Purchase Patterns.....	19
Crustaceans.....	19
Finfish.....	21
Molluscan Shellfish.....	24
Farm Raised vs. Wild Caught.....	26
Organic Seafood.....	29
Consumer Perceptions of Organic Seafood.....	29
Consumer Perceptions of Organic Seafood Compared to Conventional Seafood.....	30
Purchase Patterns.....	34
Willingness to Pay.....	37
Profile of Seafood Consumers.....	37
Profile of Consumers Interested in Purchasing Organic Seafood.....	41
Consumer Willingness to Pay for Organic Seafood.....	44
Opportunities for Market Penetration.....	48
Conclusions.....	50
Consumer Perceptions.....	50
Purchase Decision.....	51
Retail Opportunities.....	51
References.....	55
Bibliography.....	56
Appendix –Telephone Survey.....	59

List of Tables

Table 1. Consumer Perceptions of Characteristics that Make Food Organic	xi
Table 2. Consumer Sales and Growth Rates of Organic Foods.....	3
Table 3. The Most Important Reason for Consuming Seafood	10
Table 4. Information That Would Induce Consumers to Purchase More Seafood.....	11
Table 5. Consumer Perceptions of Health Concerns Related To Seafood	17
Table 6. Types of Aquacultured Seafood Purchased By Consumers	19
Table 7. Consumer Perception about the Type of Seafood that is Better Quality.....	26
Table 8. Consumer Perception about the Type of Seafood that Tastes Better	27
Table 9. Consumer Perception about the Type of Seafood that is Safer	27
Table 10. Consumer Perception about the Type of Seafood that is More Expensive	28
Table 11. Consumers Perception about the Type of Seafood that is more Environmentally- Friendly.....	28
Table 12. Consumer Perception about the Type of Seafood that has Year-Round Availability.....	29
Table 13. Consumer Perception of Attributes of Organic Food	30
Table 14. Statement That Best Describes Consumer Attitude And Purchase Behavior with respect to Organic Food.....	35
Table 15. If The Seafood Consumers Purchase Regularly Costs \$1, How Much of a Price Premium Are They Willing To Pay for Certified Organic Seafood?.....	37
Table 16. Monthly Expenditure on Seafood by Gender	38
Table 17. Monthly Expenditure on Seafood by Neighborhood of Residence	38
Table 18. Monthly Expenditure on Seafood by Household Size.....	39
Table 19. Monthly Expenditure on Seafood by Age	39
Table 20. Monthly Expenditure on Seafood by Ethnicity	39
Table 21. Monthly Expenditure on Seafood by Education Level.....	40
Table 22. Monthly Expenditure on Seafood by Employment Status.....	40
Table 23. Monthly Expenditure on Seafood by Income	41
Table 24. Interest in Purchasing Organic Seafood by Gender.....	41
Table 25. Interest in Purchasing Organic Seafood by Neighborhood O3 Residence	41
Table 26. Interest in Purchasing Organic Seafood by Household Size	42
Table 27. Interest in Purchasing Organic Seafood by Age.....	43
Table 28. Interest in Purchasing Organic Seafood by Ethnicity.....	43
Table 29. Interest in Purchasing Organic Seafood by Education Level	43
Table 30. Interest in Purchasing Organic Seafood by Employment Status	44
Table 31. Interest in Purchasing Organic Seafood by Income.....	44

List of Tables (Contd.)

Table 32. Willing To Pay For Organic Seafood by Gender	45
Table 33. Willing To Pay For Organic Seafood by Neighborhood	46
Table 34. Willing To Pay For Organic Seafood by Household Size	46
Table 35. Willing To Pay For Organic Seafood by Age.....	47
Table 36. Willing To Pay For Organic Seafood by Ethnicity.....	47
Table 37. Willing To Pay For Organic Seafood by Education Level.....	47
Table 38. Willing To Pay For Organic Seafood by Employment Status.....	48
Table 39. Willing To Pay For Organic Seafood by Income	48
Table 40. Types of Information That Would Induce Consumers To Purchase More Seafood	49

List of Figures

Figure 1. The most important reason for consuming seafood	viii
Figure 2. Attitude and purchase behavior toward organic foods	viii
Figure 3. Would you purchase organic seafood?.....	ix
Figure 4. Consumer perceptions of organic seafood compared to Conventional seafood.....	ix
Figure 5. Do you purchase seafood for home consumption?.....	7
Figure 6. Do consumers believe seafood is being inspected for quality and safety?.....	13
Figure 7. Have consumers noticed country of origin labeling (COOL) of seafood at the supermarket?	14
Figure 8. Do consumers believe country of origin labeling (COOL) of seafood is useful?.....	14
Figure 9. Does country of origin labeling (COOL) influence consumer Purchasing Decisions?	15
Figure 10. Would an “environmentally friendly” label affect consumer Purchasing decisions?	16
Figure 11. Are consumers aware of any health concerns with seafood?	17
Figure 12. Have consumers ever purchased Aquacultured or farm raised seafood?.....	18
Figure 13. Did consumers purchase shrimp in the past month?	20
Figure 14. Did consumers purchase crayfish in the past month?	20
Figure 15. Did consumers purchase salmon in the past month?.....	21
Figure 16. Did consumers purchase tilapia during the past month?.....	22
Figure 17. Did consumers purchase catfish during the past month?	22
Figure 18. Did consumers purchase trout during the past month?	23
Figure 19. Did consumers purchase hybrid striped bass during the past month?.....	23
Figure 20. Did consumers purchase clams during the past month?.....	24
Figure 21. Did consumers purchase mussels during the past month?	25
Figure 22. Did consumer purchase oysters during the past month?	25
Figure 23. Consumer perception that organic seafood would be free of Chemicals, Pesticides, and antibiotics	30
Figure 24. Consumer perception that organic seafood would be safer than Conventional Seafood.....	31
Figure 25. Consumer perception that organic seafood would have better Flavor than conventional seafood	31

List of figures (Contd.)

Figure 26. Consumer perception that organic seafood would be nutritious than Conventional seafood.....	32
Figure 27. Consumer perception that organic seafood would be of better Quality than conventional seafood.....	32
Figure 28. Consumer perception that producing organic seafood be better for the Environment than conventional seafood.....	33
Figure 29. Consumer perception that organic seafood production considers Animal welfare more than conventional seafood production	33
Figure 30. Consumer perception that small farmers have a competitive Advantage in the production of organic seafood	34
Figure 31. Are consumers interested in purchasing organic seafood?.....	35
Figure 32. Would consumers change their shopping location to be able to Purchase organic seafood?.....	36
Figure 33. Would Consumers Trust an Organic Label for Seafood?	36
Figure 34. Interest in purchasing organic seafood	50

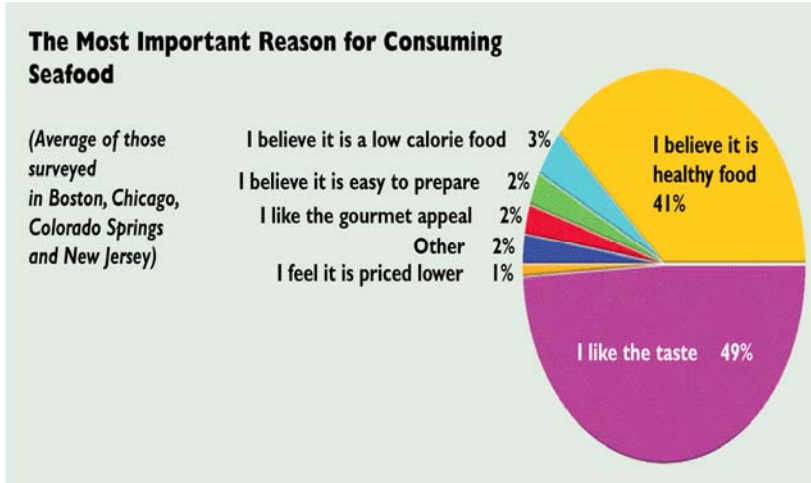
Executive Summary

The long-term goal of this project is to develop a better understanding of potential market opportunities for organically grown fish and shellfish products in the United States. Organic production offers tremendous potential for small farmers who would like to differentiate their products and develop viable markets for premium products. Segmented premium price markets are especially vital to the survival of the small farmer since cost of production is generally higher and the output is lower for this producer segment. The methodology employed was a compilation of qualitative and quantitative data collection in four target markets that were identified as representative of specific consumer purchase patterns. Those markets were: Colorado Springs, Colorado, Boston, Massachusetts, Chicago, Illinois, and Central New Jersey. Focus group meetings and review of on-line supermarket weekly circulars were used to help create questions for a telephonic survey, which was conducted by a professional survey company with a target of 200 completed surveys from randomly selected respondents in each target market.

To better examine consumer perceptions and attitudes toward seafood as a food category and specific purchase patterns, the survey sample used was limited to individuals who buy seafood for home consumption. Sixty-nine percent of those in the original sample indicated that they purchased seafood for home consumption while thirty-one percent did not. If the respondent indicated that he or she did not purchase seafood for home consumption the survey was terminated. The final returned sample of 800 respondents consisted of only those respondents who regularly purchase seafood for home consumption.

The most important reason given by respondents for consuming seafood was taste followed closely by the belief that it is a healthy food. Only 2 percent felt that it was easy to prepare and 2 percent thought that it had gourmet appeal.

Figure 1



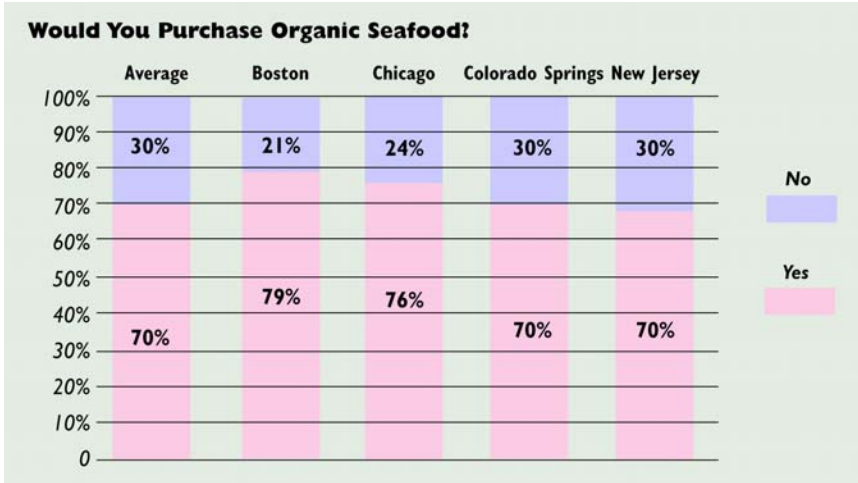
Most of the respondents (62 percent) purchased organic products in general from time to time. Twenty-three percent never purchased them. Thirteen percent described themselves as committed to the purchase of organic items whenever possible.

Figure 2



Seventy percent of those surveyed indicated an interest in purchasing organic seafood. Fifty-nine percent believed that organic seafood would be pesticide and antibiotic free. Throughout the survey, approximately 25 percent saw no advantage to organic products and were not interested in purchasing them.

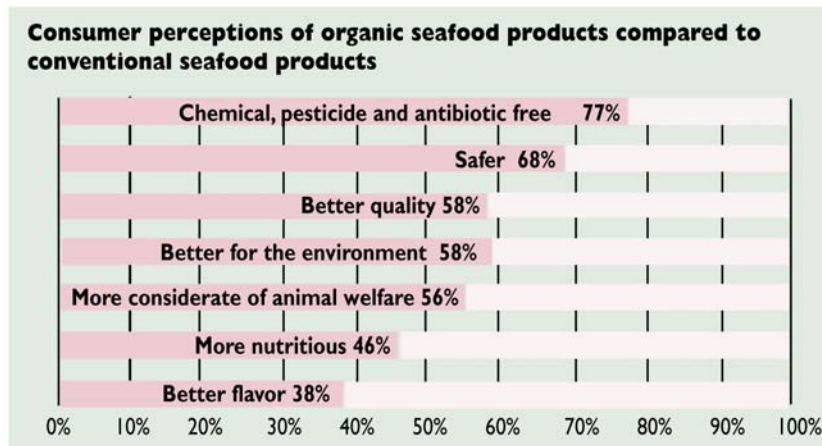
Figure 3



Seventy-four percent of those surveyed indicated that they were aware of health/safety concerns about seafood. When asked what those concerns were forty-seven percent mentioned mercury, 11 percent contaminants, 7 percent bacteria, 7 percent red tide and 5 percent food poisoning. Red tide was prominent in the New England media just prior to the survey and 21 percent of the Boston sample mentioned it. This elevated level of concern skewed the final results.

Many consumers perceived organic products are being safer and less likely to contain pesticides, contaminants and antibiotics than conventional seafood.

Figure 4



Although this survey was restricted to four target markets, it seems to indicate that there is a population of consumers who would purchase organic seafood. That purchase decision is based on a number of factors many of which are not directly related to demographics.

Consumer Perceptions

To determine what consumers perceive to be the components of organic farming systems, consumers were asked what makes a food organic. No prompts were given and respondents could provide more than one answer. The question was directed at organic food in general and did not specify organically grown seafood products. The most common answer was pesticide and antibiotic free (59 percent). Nineteen percent said nothing. This suggests that there is still a large group of individuals who either have no knowledge of the attributes of organic products or do not care to purchase them. The next most common answers were better for the environment (5 percent) and more nutritious (5 percent). Four percent felt that the product would be safer. Better taste and animal welfare standards were each listed by 2 percent of respondents.

Consumers are very concerned about contaminants in their food; because they view seafoods as carriers of certain chemical contaminants, especially mercury, organic labeling may be a positive marketing tool. This however, would be a perception based on the consumer's misunderstanding of organic farming systems. Some consumers have unachievable expectations of organic production systems specifically a zero tolerance for contaminants. Consumers seem to perceive that organic farming methods result in a totally contaminant free product and many believe that there is some level of end-product testing. Artificial inputs to the system are minimized, but there are persistent contaminants in the environment and there are additions through atmospheric deposition that cannot be controlled. A zero tolerance standard in most cases is unattainable.

Table 1: Consumer Perceptions of Characteristics that Make Food Organic

Characteristics	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Pesticide/antibiotic free	59%	55%	60%	61%	61%
Other	29%	28%	23%	35%	28%
None	19%	24%	18%	15%	18%
Better for the environment	5%	6%	5%	2%	7%
More nutritious	5%	4%	6%	5%	5%
Safer	4%	6%	4%	4%	4%
Better Quality	3%	4%	4%	2%	1%
Better Taste	2%	4%	2%	2%	1%
Animal welfare standards	2%	3%	1%	3%	3%

Throughout the survey approximately 25 percent of the respondents expressed the belief that organic products are not significantly different from conventional products and are not worth any price differential. This viewpoint was clearly expressed during in-depth conversations in the focus groups. Conversely, in another question approximately 25 percent of the respondents described themselves committed to the purchase of organic products. That committed group spanned all neighborhoods (urban, suburban and rural), income levels, and ethnic groups. There was a correlation between education level and interest in purchasing organic seafood. Consumers in the over 65 group were less interested in purchasing organic seafood but those committed consumers in this age category were willing to pay a significant price differential.

Using the above consumer perceptions several issues were identified as being critical in improving the marketability and salability of seafood, as well as in strengthening the position of organic seafood in the American market.

Introduction

For the purposes of this report, the term seafood is used to characterize all freshwater and saltwater finfish and shellfish used for food. Likewise, for the purposes of this report, bivalve molluscan shellfish raised on leased beds are considered farm-raised, although not all states include these shellfish as a farm-raised product.

Numerous groups have voiced concerns about the deteriorating American diet especially among young people. Poor diet has led to an increase in diabetes, coronary heart disease, obesity, which in turn has led to escalating health care costs. Indeed, the number one cause of death in the United States remains coronary heart disease, although dietary and lifestyle strategies could significantly change this statistic. Numerous groups including the American Heart Association, the American Cancer Society, the American Academy of Natural Sciences, the American Diabetes Association, and the United States Department of Agriculture all recommend that Americans significantly increase their consumption of seafood products to maintain good health.

Although consumers have generally positive attitudes toward seafood, its consumption in the United States has remained relatively static over the past fifty years. Per capita annual consumption reached a record 16.6 pounds in 2004 (National Marine Fisheries Service). The top ten products consumed in 2004 were shrimp, canned tuna, salmon, pollock, catfish, tilapia, crab, cod, clams and flatfish. (National Fisheries Institute). The fish farming community increasingly supplies shrimp, salmon, catfish, tilapia and clams, so that the list of top products reflects the growing importance of aquaculture in the American market. Many speculate that the increase in consumption of farm-raised products may be due to decreasing prices and increasing supply among those commodities.

Fish and shellfish account for less than 8 percent of the total for all high protein animal foods consumed in the United States and, for centuries, wild harvesting of fish and shellfish provided the bulk of the seafood supply. Blake (2000) discusses how the centuries old practice of harvesting fish from the wild is in jeopardy due to over-fishing.

According to Blake, in 2000 there were 96 species of fish that were classified as “threatened” and it is estimated that by 2010 there will be 125. Although the United States has developed an extensive fisheries management program designed to significantly reduce by-catch, allow species to rebuild, and establish maximum sustainable yields to help ensure the future of fishery stocks; the vast majority of seafood consumed in the United States is imported. These imports often originate in countries that do not have management programs for their wild catch and do not practice environmentally sound aquaculture.

Although aquaculture is increasingly supplying the American market, many consumers do not have a clear understanding of fish farming. This is further exacerbated by misinformation and agenda-driven disinformation that is routinely provided to and reported by the media. Robertson et al. (1999) conducted a survey of New England residents to understand consumers’ knowledge and attitudes towards marine aquaculture and found that most respondents (53.6 percent) were unfamiliar with aquaculture.

Currently aquaculture is the fastest growing food producing sector. In 2002, the Food and Agriculture Organization (FAO) reported that world aquaculture production of fish, crustaceans and mollusks totaled 39.8 million metric tons in comparison to captured production of 93.2 million metric tons (Chan 2005). There are however concerns relating to aquaculture that have put the industry under the intense scrutiny. Examples of health concerns that have been widely reported in the media are levels of PCBs and use of colorants in farmed salmon.

Concerns relating to health and the environment have led to an increased consumer desire to purchase “natural,” “hormone-free”, and “antibiotic-free” fish and shellfish (Boehmer et al., 2005). Consumers have come to recognize organic farming as a production method that can satisfy that desire. Consumers view organic food as being produced without synthetic pesticides, unnatural fertilizers, added growth hormones, antibiotics, artificial additives, food coloring, ionizing radiation, and as not genetically modified in any way. The United States Department of Agriculture (USDA) Organic Food

Production Act defines an organic production system as “a production system that is managed in accordance with the Act and regulations in this part to respond to site-specific conditions by integrating cultural, biological, and mechanical products that foster cycling of resources, promote ecological balance and conserve biodiversity” (www.ams.usda.gov/nop/NOP/standards.html). The USDA focus is the production system rather than the resulting product.

The sale of organic food grew by more than 20 percent each year in the 1990’s. By 2002 the organic food market was estimated to be at \$11 billion (Willer and Yussefi, 2004). Although the total percentage of the food supply produced using organic methods in the United States is only between 1 and 2 percent, that number is on the rise as a result of the demand from consumers (Whole Foods Market, Wild Oats, Trader Joe’s). Each of these chains is opening new stores to meet growing demand.

Table 2: Consumer Sales and Growth Rates of Organic Foods, 1997-2003

Year	Sales (Billion dollars)	Growth Rate (percent)
1997	\$3.6	
1998	\$4.3	19.7
1999	\$5.0	18.2
2000	\$6.1	21.0
2001	\$7.4	20.7
2002	\$8.6	17.3
2003	\$10.4	20.2

Source: Nutrition Business Journal, 2004

Although relatively new to organic production principles, there have been efforts to begin applying organic principles to aquaculture. Still, when compared to other organic foods, organic aquaculture is in its infancy worldwide. According to figures released by FAO on the status of organic aquaculture, as of June 2004, worldwide production in 2000 was estimated at approximately 5,000 metric tons (Franz, 2004). For the year 2003 this report uses data from Naturland, a German organic certifier, to estimate that worldwide organic aquaculture production reached a total of about 7,500 metric tons, the bulk of which is from the production of organic salmon.

A study funded by the EU FAIR Programme (Aarset, 2000) to understand European consumers perception of organic salmon production; revealed that the term ‘organic’ as it applies to salmon created a great deal of confusion. In general, respondents indicated an expectation that organic salmon should be environmentally friendly and be produced in a sustainable manner. This expectation is justified, however, there is so much negative press about salmon farming systems (generally focused on intensive production methods, possibility of escape and contamination of wild gene pools, excessive waste production, use of drugs, colorants, etc.), that it is difficult to reconcile the two prospectives. In addition to leaving consumers confused about the terminology, organic aquaculture is a tough sell among many consumers in Europe. A study done by Seafish Research and Information (Gross, 2001) surveyed housewives in the UK to understand consumer attitudes and concluded that the concept of organic seafood did not resonate among highly committed organic food consumers. These consumers believe that “the concept of organic seafood lacks credibility.” This lack of credibility existed even though there is an established organic seal developed by the UK Soils Association.

In the U.S., a survey of seafood consumers conducted by the Seafood Choices Alliance (2001) indicates interest by a sizable number of respondents in consuming organic seafood. When respondents were asked how likely they would be to purchase fish labeled “organic” over a fish of the same species or a similar tasting fish, 36 percent described themselves as at least somewhat more likely to purchase the product labeled organic compared to 16 percent who responded less likely. This study looked only at label considerations and did not include a price component.

Research Objectives

The long-term goal of this project is to develop a better understanding of potential market opportunities for organically grown fish and shellfish products in the United States. Organic production offers tremendous potential for small farmers who would like to differentiate their products and develop viable markets for premium products. Segmented premium price markets are especially vital to the survival of the small farmer since cost of production is generally higher and the output is lower for this producer segment.

Availability of appropriate market intelligence will assist farmers in meeting the challenges of a global market. It will allow industry to adjust business and market planning to develop innovative strategies that can support *viable* price structures over the long term.

Marketability of organically grown fish and shellfish is a national priority supported by the National Organic Aquaculture Working Group, which operates under the auspices of the USDA Agriculture Marketing Service National Organic Program and the National Fisheries Institute, a Washington-based industry trade group. This group provided a draft set of Organic Standards to the National Organic Standards Board for review. Currently, there are no accepted standards in the United States for the production of organic seafood. The lack of standards means that imported product can bear the seal of a foreign certifying agency and be sold as organic in all states except California. Numerous European certifying agencies have adopted standards for specific aquacultured products and labeled product is making its way into the United States market and potentially capturing long-term market share.

The project identifies those components of “brand” (organically-grown) utility which are most potent in developing and increasing market share. It provides an in-depth analysis of consumer and retailer perceptions of seafood, farm-raised seafood and organically grown

seafood in four target markets. The project identifies barriers to consumer acceptance and suggests possible remedies to lower these barriers. It provides insights into the most viable markets and market penetration strategies for organically grown seafood products. The potency of descriptors such as “natural”, “environmentally friendly” and “sustainable” that could be used on product labels in addition to the federally mandated term “farm-raised” is explored. The influence of the recently adopted requirement for country of origin and method of production labeling on purchase decision is evaluated.

For the consumer, the availability of organically grown aquatic products will increase their comfort level and possibly increase their willingness to purchase and prepare seafood products for their families. This shift would greatly add to the quality of the American diet.

Methodology

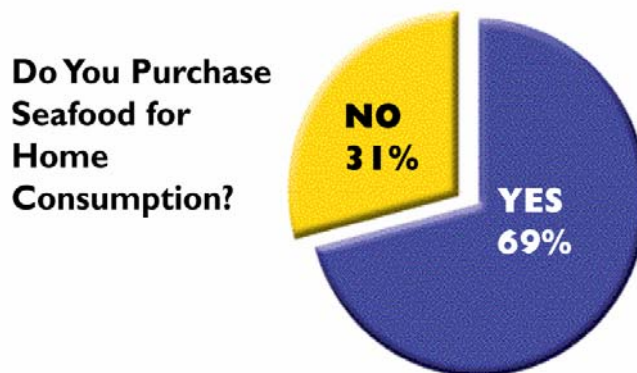
The methodology employed was a compilation of qualitative and quantitative data collection in four target markets that were identified as representative of specific consumer purchase patterns. Those markets were: Colorado Springs, Colorado (land-locked market without a strong seafood consumption tradition but with an influx of consumers from across the country); Boston, Massachusetts (strong market with a highly developed seafood tradition); Chicago, Illinois (an inland market that purchases a high volume of bivalve molluscan shellfish); and Central New Jersey (an affluent, well educated market).

Prior to the telephone survey, focus group meetings and on-line supermarket weekly circulars were reviewed to help identify those farmed seafood products that were most commonly sold in each of the four target markets. The focus groups were also used to focus and frame the questions for the telesurvey. Price points for those products also were considered. In several instances, survey questions were developed to mimic questions asked in other similar studies (specifically Gross 2001) to provide benchmarks. The focus

groups provided direction for a larger telephone survey in each of the target markets. The telesurvey was developed jointly by staffs at the New Jersey Department of Agriculture and the Agricultural, Food and Resource Economics group at Rutgers University.

The telephone survey was created with the aim of collecting key information relating to United States consumers awareness and knowledge of organic aquatic foods, willingness to pay premium for organic seafood, attitudes towards risks and benefits of different types of seafoods. Information was also gathered on consumer knowledge and attitudes relating to product labeling showing country of origin (COOL). A professional telephone survey company was hired to conduct the survey and phone numbers were randomly generated. Two hundred telephone surveys were completed utilizing the computer-assisted telephone interview (CATI) technology in each of the four target markets for a total of 800 surveys. The telephone surveys were limited to individuals (69%) who actually purchase seafood for home consumption.

Figure 5



To better examine consumer perceptions and attitudes toward seafood as a food category and specific purchase patterns, the sample was limited to individuals who buy seafood for home consumption. Sixty-nine percent of the original sample indicated that they purchased seafood for home consumption while thirty-one percent did not. If the respondent indicated that he or she did not purchase seafood for home consumption, the survey was terminated.

The survey took a drill down approach. Consumers were first asked about attitudes toward seafood in general, then farm-raised seafoods, and finally organically grown seafoods. This approach provides background information so that attitudes about organically grown seafoods can be considered in comparison and contrast to the entire seafood product category. In some instances, questions were posed in more than one format. This provided an opportunity to verify responses.

In evaluating the data collected, many of the questions require a response to a single facet question while the actual purchase decision is based on an array of product attributes in addition to other factors. When considering responses to questions dealing with organic seafood, a comparison to overall attitudes about farm-raised product versus wild harvest should be considered. This is especially important since many consumers believe that they lack knowledge about purchase and preparation of seafood. This has been an ongoing issue for the seafood industry as a whole. This belief is manifested in surveys and discussion groups where consumers indicate that they rely heavily on the seafood associates to make purchase decisions. This is not the case with most other center of the plate protein choices.

After the consumer telesurvey phase of the project was completed, a survey of chain store seafood managers was conducted. The survey focused on their attitudes toward organic seafood and their willingness and ability to include such products in their seafood programs. Several questions focused on their perception of their specific consumers' attitudes toward seafood.

Survey Results

Demographics

Fifty-three percent of the households surveyed were 1-2 person, while 35 percent were 3-4 person households. Sixty-four percent of the respondents were female and 36 percent male. Twenty-five percent considered their neighborhood to be urban, 62 percent suburban and 10 percent rural. Thirty-four percent were between 36 and 50 years of age, 28 percent between 51 and 65, 21 percent over 65, 14 percent between 21 and 35 and 1 percent younger than 20. The survey was slightly biased toward older consumers because of the time the survey was conducted, the length of the survey and the greater willingness among older consumers to participate. Higher levels of seafood consumption among these older individuals might also have been a factor since many consumers indicated that they are aware of the heart healthy benefits of seafood. Twenty-seven percent of those surveyed refused to answer the question dealing with income. Seventeen percent reported household incomes in-between \$50-\$75,000, 16 percent \$25-\$50,000, 15 percent \$75-\$100,000, 7 percent under \$25,000 and 6 percent over \$100,000. Fifty percent were employed full time, 25 percent retired, 10 percent employed part-time, 8 percent homemakers, and 2 percent unemployed but looking for work.

Forty-three percent of those surveyed consumed seafood at home 1-2 times per month while 31 percent ate seafood at home 3-4 times per month. Only 14 percent reported consuming seafood at home 5-6 times per month, 6 percent 7-8 times per month and 6 percent 9 or more times per month. Currently, most health organizations recommend a minimum of two eight-ounce uncooked weight fish servings per week. According to FDA statistics, the average per capita U.S. weekly consumption is 2.292 ounces, which is only 14 percent of the recommended intake. In this survey, only 12 percent of those sampled were consuming the recommended amount of seafood.

Reasons for Consuming Seafood

The most important reason for consuming seafood was taste as reported by 49 percent of the respondents while 41 percent indicated health benefits. This is similar to the results in the survey of consumers in the New York metropolitan area conducted by Gall and O’Dierno (1992). The ranking of results in the survey was: I purchase seafood because 1) I like the taste; 2) I believe it is a healthy food choice, and 3) I believe it is a low calorie food.

Table 3: The Most Important Reason for Consuming Seafood

Reason	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Like the taste	49%	48%	43%	55%	49%
I believe it is healthy food	41%	42%	43%	35%	42%
I believe it is a low calorie food	3%	2%	5%	3%	3%
I believe it is easy to prepare	2%	3%	2%	2%	2%
I like the gourmet appeal	2%	1%	3%	2%	1%
I feel it is priced lower	1%	2%	1%	1%	1%
Other	2%	2%	3%	2%	2%

In the current study, only two percent of the sample felt that it was easy to prepare and two percent thought it had gourmet appeal. During the focus group portion of the project, several people indicated that they don’t buy shrimp for home consumption because it is too difficult to prepare. Both of these attitudes should be relatively simple to change with a good promotional campaign. One percent felt it was low priced. Currently, the price gap between seafood and other center of the plate protein choices such as poultry and red meat is shrinking. This may be a marketable moment for seafood products but it will require a directed effort to convince consumers.

Factors/Information that would induce consumer to purchase more seafood

Sixty-nine percent of those sampled indicated that they would purchase more seafood if prices were lower. Even if prices for poultry and meat continue to escalate, this may be a difficult perception to change. Increased national consumption of aquacultured products including farmed salmon, catfish and tilapia may be directly attributable to the lower and more stable price among these species.

Table 4: Information that Would Induce Consumers to Purchase More Seafood

Information Type(s)	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Lower Price	69%	72%	73%	72%	60%
Product Freshness	67%	69%	66%	68%	65%
Visual Appeal	48%	50%	48%	48%	45%
Knowledgeable Counter Personnel	34%	40%	30%	37%	31%
Availability of Recipes or Information	30%	24%	39%	29%	27%
In-Store Demonstration/Samples	23%	24%	26%	24%	20%
None	5%	4%	4%	2%	9%
Don't know / Unsure	1%	1%	2%	0%	1%

Sixty-seven percent of those surveyed listed product freshness as an important contributor to the purchase decision. Gall and O'Dierno (1992) reported that consumers strongly identified product freshness with product quality/safety. After an extensive discussion, those consumers determined that freshness was not synonymous with quality/safety. Many consumers tend to equate the term "fresh" with "high quality". The terms are often used interchangeably. In its strictest interpretation, fresh would mean not previously frozen. If product freshness is a major concern to consumers, there should be a direct correspondence to local production. However, when local production sites were introduced to the focus groups, consumers did not equate local sites with production of high quality seafood.

Thawed product being sold out of the fresh case was a problem for a number of consumers in the Colorado focus groups. This is an opportunity for companies to

aggressively educate consumers about the quality of frozen products that are produced using new improved technologies. Frozen product fits into modern lifestyles. Purchasing frozen product allows consumers to prepare seafood more frequently because they can shop once a week and still eat seafood several times during the week. In the focus group portion of this study, many consumers were limited in the number of times that they would eat seafood by the number of shopping trips they were willing to make. It was generally agreed among focus group participants that seafood should be consumed on the day of purchase or the next day at the very latest. Inland consumers in the Colorado focus groups were concerned about the distance seafood had to travel to reach the market. Many complained about thawed product that was being sold in the fresh case even when that product was clearly marked previously frozen, perceiving this as a deceptive practice.

Visual appeal of the product was listed as being important by 48 percent of those surveyed and 34 percent felt that knowledgeable counter personnel were important. Both of these responses highlight the importance of sales associates in driving seafood purchases. Consumers tend to lack confidence in their ability to select seafood and often depend on store associates to help them make a decision. Purchase is often based on the reputation of the store. Many of the consumers in the focus groups indicated that they restrict their purchase of seafood to specific stores because those are the stores that sell good quality seafood. Many consumers in the focus groups had a good relationship with the sales associate and, clearly depended upon his/her suggestions and advice.

In the Gall and O'Dierno (1992) study, consumers were asked what influences the purchase decision at the seafood counter. Product freshness was the most important factor while price was second, visual appeal scored third and confidence in the seafood department fourth.

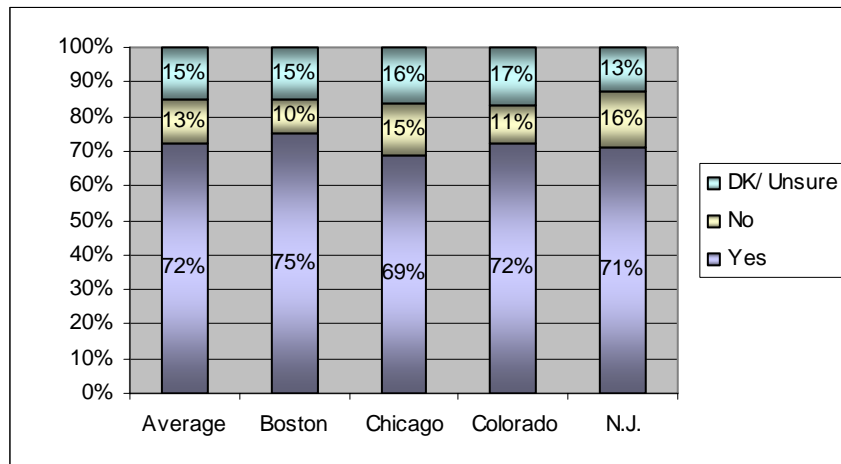
In the current study, thirty percent wanted more information and recipes. Twenty-three percent wanted in-store demonstrations and samples. This is similar to opinions voiced during the focus groups where consumers wanted more information and were unwilling

to purchase a new product unless they sampled it first. Demonstrations and sampling programs are an effective means to entice customers to purchase new or unfamiliar items. These activities allow customers to taste new products and reduce the anxieties that can develop if they are not sure that they will like a product when they prepare it at home.

Seafood Inspection

Seventy-two percent of the consumers surveyed felt that seafood was being inspected. Thirteen percent felt that it was not being inspected and fifteen percent were unsure. The numbers were fairly consistent in each of the markets. During the focus groups, consumers were unclear about which agency was actually conducting the inspections. Many people discussed USDA since they were familiar with meat and poultry inspection. Some people in the focus groups also thought that it was the store that inspected the product for quality and safety.

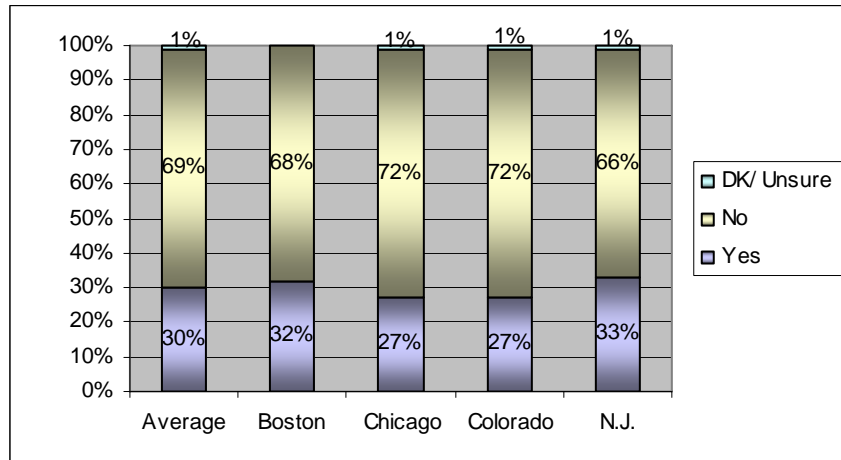
Figure 6: Do Consumers Believe Seafood is Being Inspected for Quality and Safety?



Country of Origin Labeling

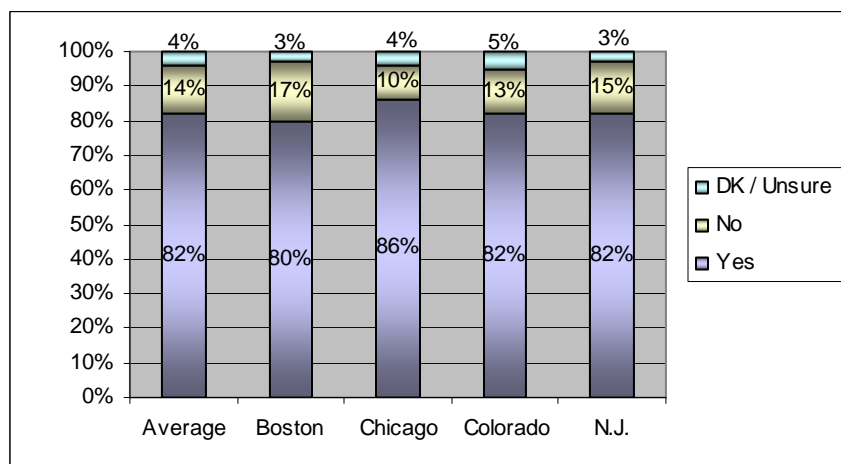
The survey was conducted during August of 2005 a full four months after the USDA country of origin labeling rule had been implemented so that stores had already begun complying with the mandatory rule requiring retailers to list production method (wild caught or farm-raised) and country of origin for all seafood products.

Figure 7: Have Consumers Noticed Country of Origin Labeling (COOL) of Seafood at the Supermarket?



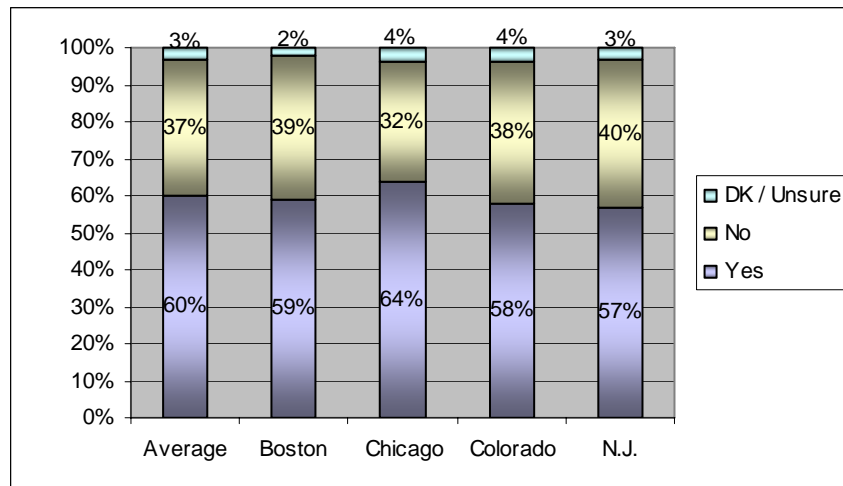
Sixty-nine percent of those surveyed had not noticed Country of Origin Labeling (COOL) even though the survey was conducted a full four months after country of origin labeling had been instituted, requiring this labeling for seafood sold in retail operations other than fish markets and restaurants. The USDA has made country of origin labeling mandatory for all retailers who hold a Perishable Agricultural Commodities Act (PACA) license. A PACA retailer is defined in the as a business engaged in the selling of fresh and frozen fruits and vegetables at retail with an annual invoice value of more than \$230,000.

Figure 8: Do Consumers Believe Country of Origin Labeling (COOL) of Seafood is Useful?



Eighty-two percent of the respondents indicated that they believed COOL would be useful, while only 60 percent said that it would influence purchase decision. However, in the focus groups, when asked which location conveys the highest quality, 80 percent of those sampled preferred domestic product while only 10 percent chose imported. The preference for imported product was highest in Chicago (11 percent) and Colorado Springs (12 percent) and lowest in Boston (4 percent).

Figure 9: Does Country of Origin Labeling (COOL) Influence Consumer Purchasing Decisions?



During the focus groups, consumers were asked which package label they would most likely select in the supermarket. Only 18 percent of those surveyed selected a local production site. Sixty-one percent chose a site, Cape Cod, which conjured up a romantic idealized location. Twelve percent chose the “pristine waters of the Gulf of Mexico”. This clearly demonstrates the importance of product labeling. Nine percent chose farm-raised in Chile. When presented with the option of “imported” product in the focus groups, 32 percent chose that terminology over 47 percent who chose a local production site. Acceptance of those local production sites varied considerably in different regions. Later in the focus groups, seventy-five percent indicated that they would be much more likely to purchase a product if they were informed about regions that are known for high

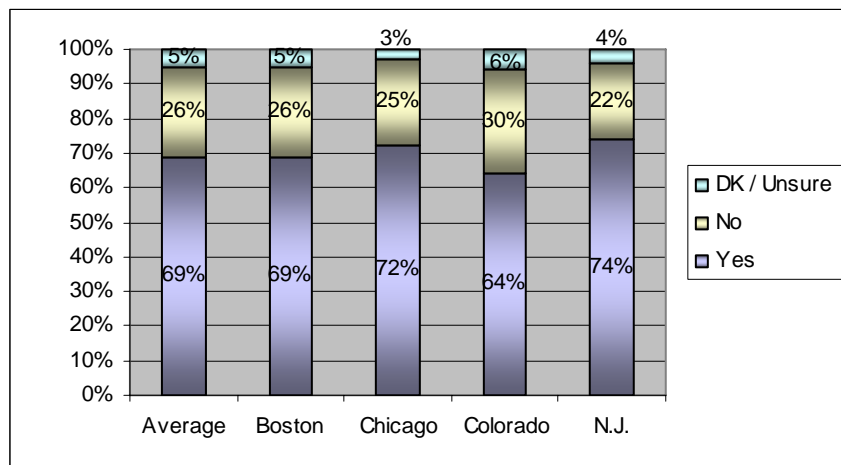
quality. These responses seem to indicate that food miles are not as important as the consumer’s general perception of the growing area.

Eco-Labeling

Sixty-nine percent indicated that an “environmentally-friendly” label would influence the purchase decision. This was about the same percentage as those that felt country of origin labeling (60 percent) would influence their purchase decisions. This number was lowest in Colorado (64 percent) and highest in New Jersey (74 percent).

When retailers were asked whether or not consumers would choose an environmentally friendly label, only 50 percent thought that it would drive the purchase decision.

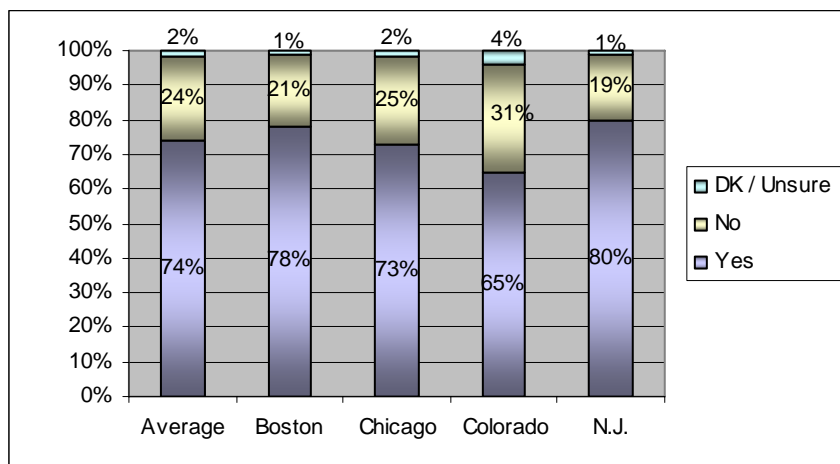
Figure 10: Would an “Environmentally-Friendly” Label affect Consumer Purchasing Decision?



Seafood and Health

Seventy-four percent of those surveyed were aware of health concerns about seafood. The highest level of awareness was in New Jersey where 80 percent reported that there were health concerns about seafood. The second highest number was 78 percent in Boston. Many consumers in Boston were familiar with the red tide issues that had widespread press in 2005. Colorado had the lowest level of awareness at 65 percent.

Figure 11: Are Consumers Aware of any Health Concerns with Seafood?



Consumers were asked what specific concerns they had heard. No prompts were given. Sixty-five percent had heard concerns about mercury, 15 percent mentioned contaminants in general, 7 percent identified bacterial concerns, and 6 percent food poisoning. In both Chicago and Colorado Springs, people specifically mentioned cadmium as a concern. Although people were aware of possible health concerns, the quantitative portion of the study did not provide any insights into the overall level of understanding.

Table 5: Consumer Perception of Health Concerns with Seafood.

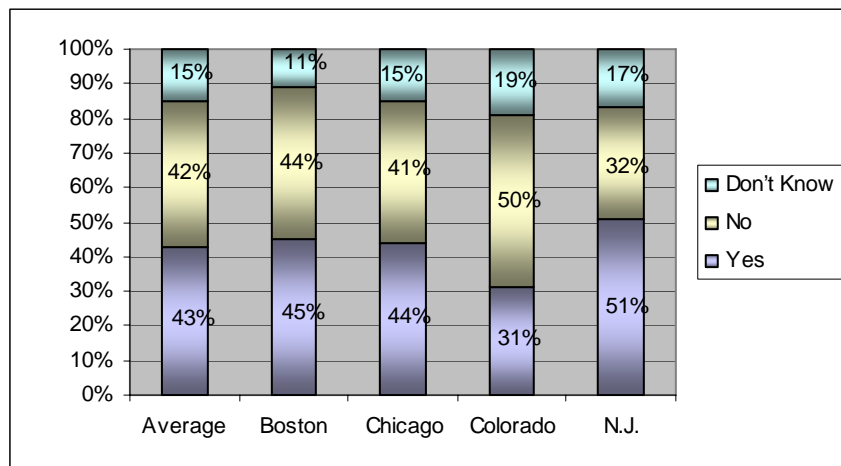
Health Concerns	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Mercury	65%	66%	68%	58%	69%
Other	24%	22%	23%	31%	24%
Contaminants	15%	10%	11%	22%	18%
Red Tide	9%	30%	1%	2%	2%
Bacteria	9%	6%	12%	12%	8%
Food Poisoning	6%	4%	8%	7%	7%
PCBs	3%	3%	1%	5%	4%
Cholesterol	2%	4%	0%	1%	3%
Viruses	2%	1%	6%	2%	1%
Colorants	1%	1%	1%	0%	3%
Cadmium	1%	0%	1%	2%	0%

Farm-Raised Seafood

Purchase Patterns

Shoppers were provided with a definition of aquaculture. On average, fifteen percent of the shoppers were unsure about whether they had ever purchased aquacultured seafood while 43 percent indicated that they had and 42 percent indicated that they had not. This number was tested later in the survey when they were asked a recall question about particular species where much of the production is aquacultured. This survey was conducted four months after country of origin labeling for seafood had been implemented. In addition, those regulations require larger supermarkets to label their seafoods with method of production, either wild caught or farm-raised.

Figure 12: Have Consumers ever Purchased Aquacultured or Farm-Raised Seafood



To further test the validity of the purchase questions, consumers were asked which aquacultured species they had purchased. Salmon was listed by consumers in all of the markets and was listed by 65 percent of the total respondents. Shrimp (27 percent) was the second most commonly listed product. Catfish was purchased by 23 percent of the overall sample and was most popular in Chicago (40 percent) and Colorado Springs (31 percent) as might be expected since those markets have a less developed seafood tradition and catfish has been extensively promoted. Tilapia (12 percent) was a popular species and was listed by New Jersey consumers (17 percent). This may be attributable to a local wholesale company that has been aggressively marketing this product to Atlantic City casinos and New Jersey supermarkets for a ten-year period. Purchase of common farm-

raised products like catfish and tilapia was lowest in the Boston sample probably because of the highly developed market for traditional wild caught marine species. In some instances, consumers listed products that are not being farmed or being farmed in very small numbers. Three percent of Chicago consumers listed crab and 2 percent listed lobster as aquacultured species. Two percent of Boston consumers listed cod, a traditional New England species, while 3 percent of the Colorado consumers included cod in their lists. Mussels, a product that has gained a great deal of market acceptance over the last few years, were not listed in Chicago, Colorado Springs or New Jersey.

Table 6: Types of Aquacultured Seafood Purchased by Consumers

Seafood Type(s)	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Catfish	23%	7%	40%	31%	19%
Clams	2%	3%	1%	0%	2%
Mussels	2%	8%	0%	0%	0%
Oysters	2%	2%	1%	3%	1%
Salmon	65%	80%	56%	55%	66%
Shrimp	27%	20%	27%	27%	33%
Tilapia	12%	6%	15%	11%	17%
Trout	7%	10%	4%	8%	6%
Other	8%	7%	9%	6%	8%

Species Specific Purchase Patterns

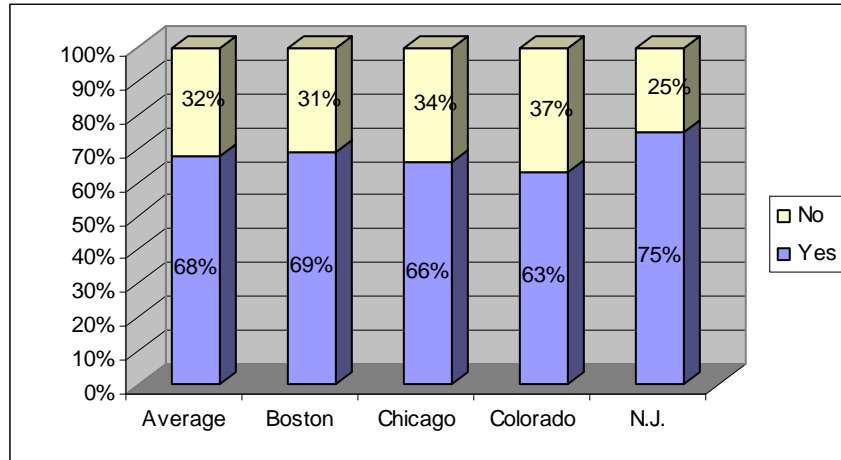
The next set of questions dealt with the purchase of species that are often farm-raised. Consumers were asked whether or not they had purchased specific types of seafood during the past month. No attempt was made to determine whether or not the consumer recognized those species as being farmed. It should be noted that the survey was conducted during the summer of 2005, and seafood purchase often has a seasonal component.

Crustaceans

Consumers were asked about purchase of individual aquacultured species during the past month. Shrimp was purchased by 68 percent of the respondents. There was no mechanism to determine whether or not this was farmed shrimp. The group Wild American Shrimp, Inc. has been aggressively promoting wild harvest shrimp recently.

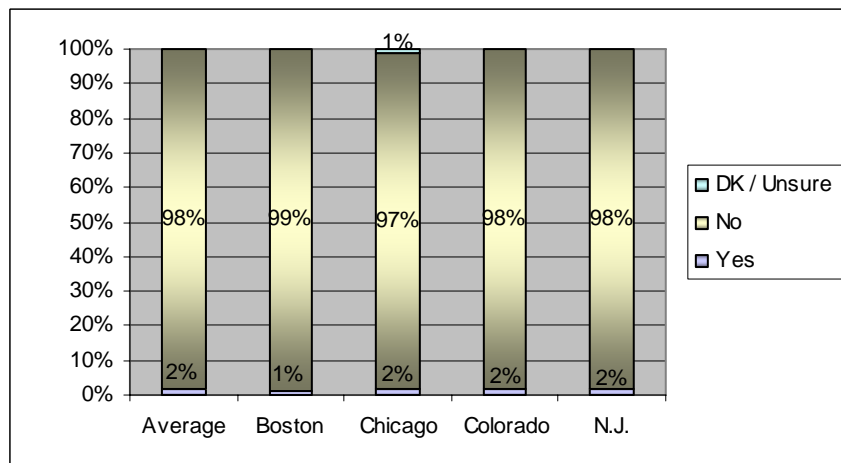
This effort has been funded in large part by federal grants. The highest purchase level was in New Jersey (75 percent) and the lowest in Colorado Springs (63 percent). This level of purchase is supported by the national consumption figures that list shrimp as the number one seafood consumed in the United States

Figure 13: Did Consumers Purchase Shrimp in the Past Month?



Crayfish purchase was extremely low and indicates that this might be a species where markets could be significantly expanded. Only two percent indicated that they had purchased crayfish during the past month. Species-specific purchase patterns will change depending upon the season and holidays. Crayfish purchase would be expected to increase during Mardi Gras and summer months when crayfish boils are a popular social activity.

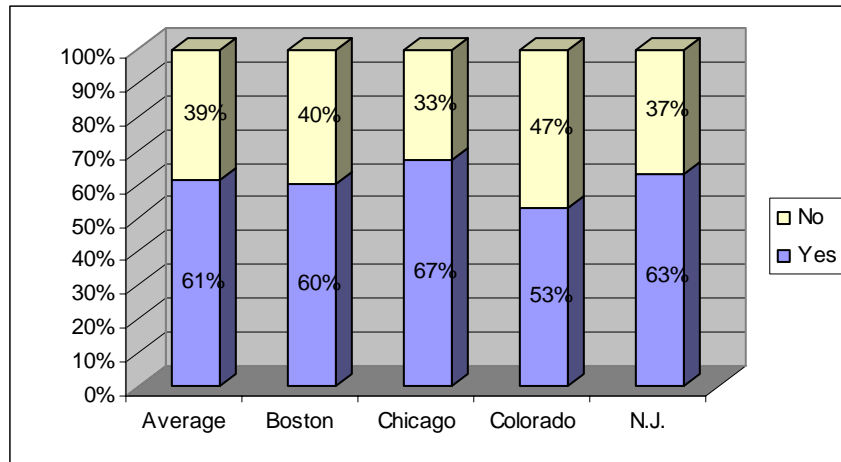
Figure 14: Did Consumers Purchase Crayfish in the Past Month?



Finfish

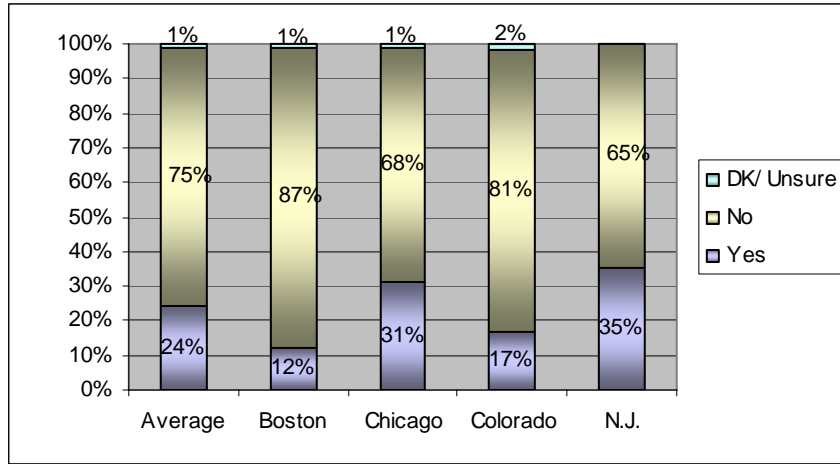
Salmon was listed by consumers in each of the markets. Sixty-one percent of the total sample indicated that they had purchased salmon during the past month. Again, there was no mechanism to determine whether or not this was a farmed product. Among finfish, salmon has the best market position by a wide margin and was readily accepted in each of the target markets. This is similar to the national consumption figures compiled by the National Fisheries Institute (<http://www.NFI.org>).

Figure 15: Did Consumers Purchase Salmon in the Past Month?



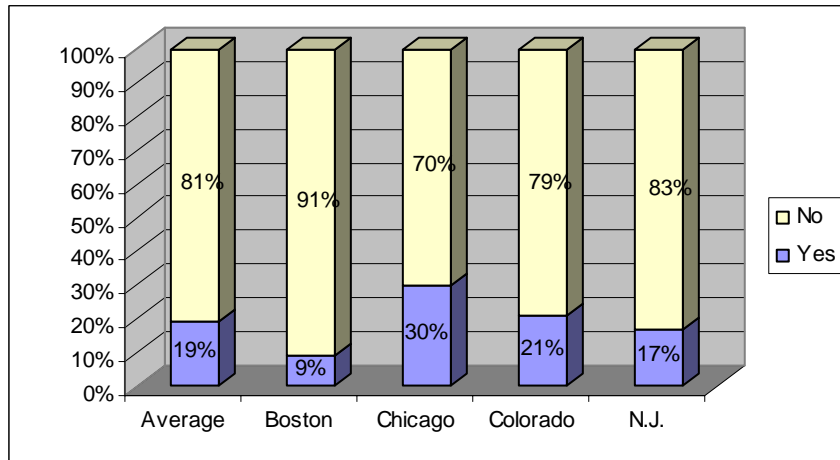
On average 61 percent of the consumers surveyed indicated that they had purchased salmon during the past month with the highest purchase levels in New Jersey (63 percent), and Chicago (67 percent). Boston was the lowest at 60 percent. In Colorado, where it might be expected that this fish would be good seller, since it is farm-raised and available year round in a frozen form; it was listed by only 17 percent of the sample. The characteristics of the product (white fleshed, mild taste, usually available as fillets) make it an ideal product for the mass U.S. market. An aggressive well-targeted marketing campaign would most likely boost these sales.

Figure 16: Did Consumers Purchase Tilapia in the Past Month?



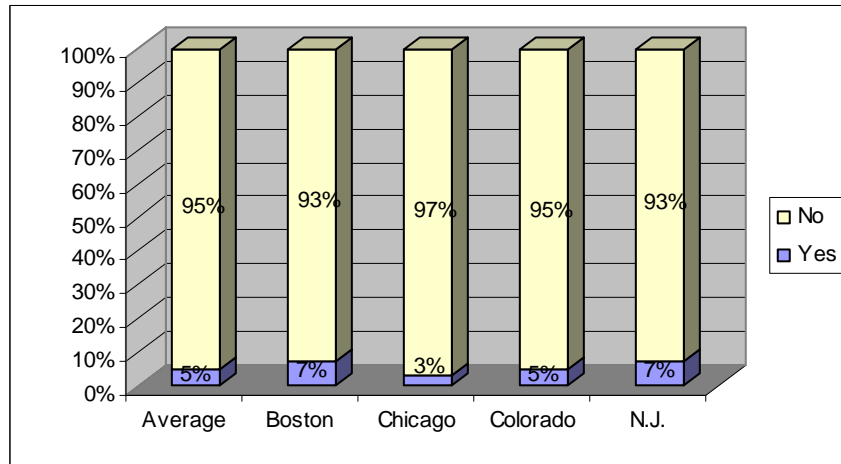
Catfish was purchased by an average of 19 percent of those surveyed. The highest purchase levels were in inland markets with Chicago at 30 percent and Colorado Springs at 21 percent. Catfish was listed by 17 percent of the consumers in New Jersey while only 9 percent of the Boston consumers indicated purchase. Greater acceptance of catfish in New Jersey as compared to the Boston market may be due to aggressive marketing and supermarket advertising. Again, the characteristics of the product, (white fleshed, mild tasting and available as a fillet), make it ideal for the U.S. mass market.

Figure 17: Did Consumers Purchase Catfish in the Past Month?



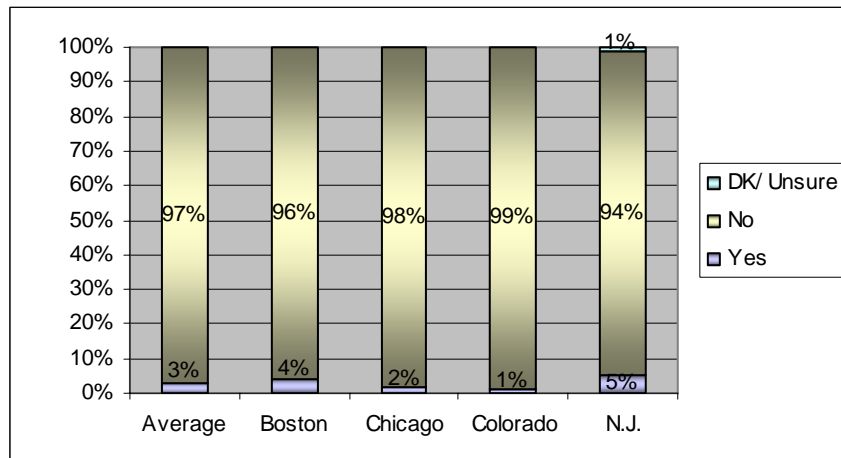
Trout was identified by 7 percent of the respondents in both New Jersey and Boston while only 5 percent of the Colorado consumers and 3 percent of the Chicago consumers indicated a purchase within the last month. There may be some consumer confusion between sea trout and freshwater trout.

Figure 18: Did Consumers Purchase Trout in the Past Month?



Only 3 percent of those surveyed indicated that they had purchased hybrid striped bass. Purchase was highest in New Jersey 5 percent, and lowest in Colorado Springs 1 percent. This may be an anomaly since many New Jersey consumers are familiar with wild striped bass and it may have resonated with them as a possible choice. Since this was a recall question, consumers may have included fish that they were familiar with, and not necessarily which they actually purchased. Consumers may not make a distinction between striped bass and hybrid striped bass.

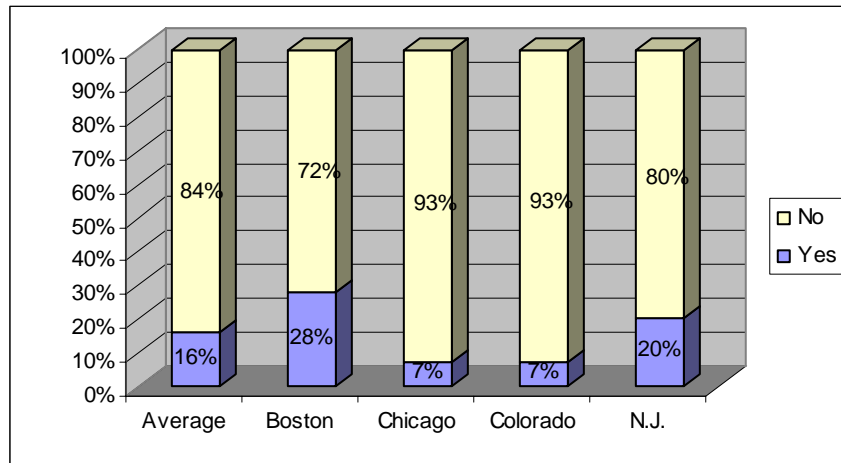
Figure 19: Did Consumers Purchase Hybrid Striped Bass in the Past Month?



Molluscan Shellfish

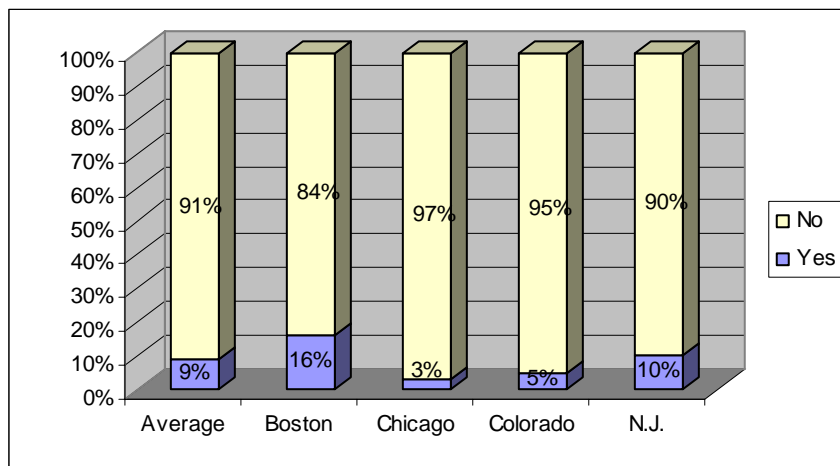
Clams were purchased by 16 percent of those surveyed, with the highest purchase levels being described by respondents in Boston (28 percent) and New Jersey (20 percent). Supermarkets in New Jersey were actively promoting local clams during the time that survey was conducted. Both Colorado and Chicago had purchase levels of 7 percent. There remain a number of issues about classifying molluscan shellfish raised on leased grounds as farm-raised and this definition can vary state by state. Clams are also produced by the wild harvest fishery.

Figure 20: Did Consumers Purchase Clams in the Past Month?



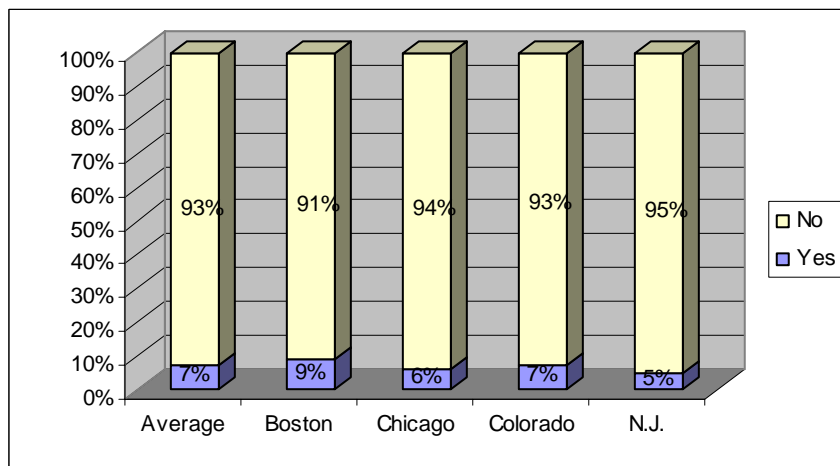
Earlier in the survey, when asked to list the farm-raised seafoods that they had purchased, only consumers in Boston listed mussels. When specifically asked about purchase of mussels during the past month, 10 percent of New Jersey consumers, 5 percent of Colorado consumers, and 3 percent of Chicago consumers listed mussels. Consumers may not be aware that many mussels are farm-raised.

Figure 21: Did Consumers Purchase Mussels in the Past Month?



Seven percent indicated that they had purchased oysters during the past month. There was no attempt to discriminate among shellstock, shucked oysters and canned product. During the preliminary research for this project, a cursory examination of supermarket weekly circulars in each of the target markets was undertaken to determine which aquacultured species were being promoted. Shucked oysters were often featured in Chicago area supermarket circulars.

Figure 22: Did Consumers Purchase Oyster during the Past Month?



Farm Raised vs. Wild Caught

Forty-seven percent of those surveyed believed that wild caught was better quality than farm-raised. This number was the highest in Boston (57 percent) and lowest in Chicago (40 percent). It is difficult to determine exactly which attributes contribute to quality. It could be taste or safety considerations or simply an undefined perception. This prejudice against farmed product is fostered by the popular food media. Food writers and media chefs regularly promote the idea that wild harvest seafood is superior to farmed product. An important example can be found in Mark Bittman’s “Fish: The Complete Guide to Buying and Cooking.”

Table 7: Consumer Perception about the Type of Seafood that is Better Quality

Type	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Farm Raised	35%	24%	41%	34%	42%
Wild Caught	47%	57%	40%	46%	43%
Don't Know / Unsure	18%	19%	19%	20%	15%

When asked which type of seafood tastes better, 52 percent responded wild caught while 24 percent chose farm-raised and 24 percent were unsure. The popular food press is a major driving force behind this concept. Many cookbooks, food columnists and television chefs reinforce this idea by touting wild harvest as having a more distinct and stronger flavor. However, stronger flavor may not be valued by the majority of American consumers. One regional upscale chain in the northeast has begun advertising that they only carry farmed salmon because of the uniformity of the product. Since wild salmon species vary in taste, quality and fat content, they want their customers to have a uniform and expected dining experience.

Table 8: Consumer Perception about the Type of Seafood that Tastes Better

Type	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Farm Raised	24%	18%	30%	19%	29%
Wild Caught	52%	60%	46%	59%	45%
Don't Know / Unsure	24%	22%	24%	22%	26%

When asked about safety, fifty-seven percent felt that farm-raised was safer. According to MarketResearch.com (2005), safety is one of the most important factors driving consumer purchase behavior. This seems to be especially true for seafood products since consumers routinely hear recreational fish advisories and health advisories about mercury, PCBs and colorants. Although these compounds are found in other foods, that information is seldom reported in the media and often the message is unclear. During the focus group portion of this study, many consumers had heard about mercury and PCBs in some seafood but were very unclear about the actual advisories. Often they invented their own conclusions from the information. The only species that they could readily identify as being cited in the mercury advisory were tuna and swordfish. Consumer fears about safety could be an opportunity for organic producers.

Table 9: Consumer Perception about the Type of Seafood that is Safer

Type	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Farm Raised	57%	50%	60%	59%	60%
Wild Caught	27%	34%	26%	22%	25%
Don't Know / Unsure	16%	16%	14%	19%	15%

When it came to price, 48 percent of the sample felt that wild harvest was more expensive while 31 percent believed that farm-raised product was more expensive.

Table 10: Consumer Perception about the Type of Seafood that is More Expensive

Type	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Farm Raised	31%	28%	33%	27%	36%
Wild Caught	48%	51%	50%	48%	42%
Don't Know / Unsure	21%	21%	17%	25%	22%

When asked which type of seafood is more environmentally friendly, 52 percent chose farm-raised while 38 percent favored wild caught. Ten percent were unsure. Although there has been a great deal of negative press about aquaculture, the majority of respondents viewed it as an environmentally friendly practice. When this issue was discussed during the focus groups, many consumers mentioned the dolphin safe tuna label. Although these labels are no longer prominent, this campaign has had lasting resonance with the public.

Table 11: Consumer Perception about the Type of Seafood that is more Environmentally Friendly

Type	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Farm Raised	52%	48%	60%	50%	50%
Wild Caught	38%	42%	32%	41%	37%
Don't Know / Unsure	10%	10%	8%	9%	13%

Consumers had definitely received the message that aquacultured seafoods are available year round. Seventy-eight percent understood that farm raised products were more readily available than wild harvest. Fluctuations in supply, quality and price have often been cited as reasons why consumers do not purchase more wild harvest seafood. Farming eliminates those peaks and valleys.

Table 12: Consumer Perception about the Type of Seafood that Has Year-Round Availability

Type	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Farm Raised	78%	77%	84%	80%	73%
Wild Caught	9%	9%	5%	8%	14%
Don't Know / Unsure	13%	14%	11%	12%	13%

Organic Seafood

Consumer Perceptions of Organic Seafood

To determine what consumers perceive to be the components of organic farming systems, consumers were asked what makes a food organic. No prompts were given and respondents could provide more than one answer. The question was directed at organic food in general and did not specify organically grown seafood products. The most common answer was pesticide and antibiotic free (59 percent). Nineteen percent said nothing. This seems to reinforce the idea that there remains a hard core of consumers who are not interested in organic, products or it may indicate that those consumers have no familiarity with the organic concept. If the latter is the case, it represents a market opportunity for organic producers. The next most common answers were, better for the environment (5 percent) and more nutritious (5 percent). Four percent felt that the product would be safer/ better taste and animal welfare standards were each listed by 2% of respondents.

Consumers are most concerned about contaminants in their food and because they view seafoods as carriers of certain contaminants especially mercury, organic labeling may be a positive marketing tool. This, however, would be a perception. Unfortunately, there are certain contaminants that are persistent in the environment and those contaminant loads can be increased through atmospheric deposition. Some consumers have unachievable expectations of organic production systems specifically a zero tolerance for contaminants. Almost all consumers considered the end product not the production system.

Table 13: Consumer Perception of Attributes of Organic food

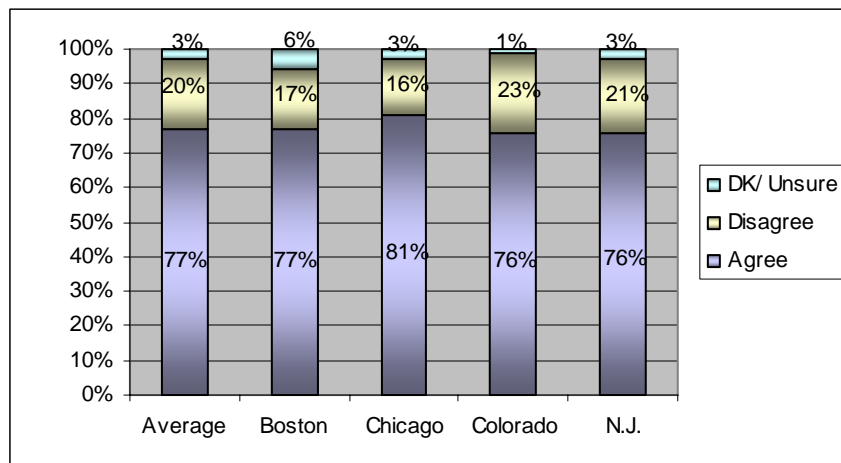
Characteristics	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Pesticide/Antibiotic Free	59%	55%	60%	61%	61%
Other	29%	28%	23%	35%	28%
None	19%	24%	18%	15%	18%
Better for the Environment	5%	6%	5%	2%	7%
More nutritious	5%	4%	6%	5%	5%
Safer	4%	6%	4%	4%	4%
Better Quality	3%	4%	4%	2%	1%
Better Taste	2%	4%	2%	2%	1%
Animal Welfare Standards	2%	3%	1%	3%	3%

Consumer Perceptions of Organic Seafood Compared to Conventional Seafood

The next set of questions compared organically grown seafood to conventional seafoods. The conventional seafoods could have been wild harvest or farm-raised. No further information was provided.

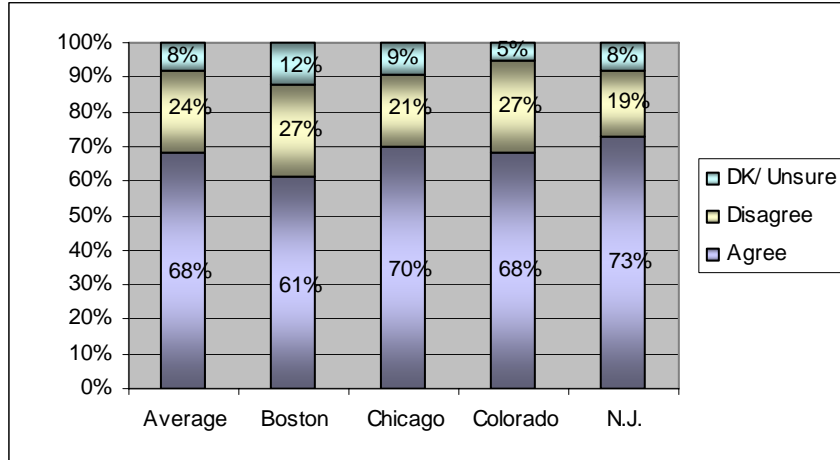
Seventy-seven percent of the sample felt that organic seafood would be *free* of chemicals, pesticides and antibiotics. Consumers in the focus group portion of the study expressed concerns about aquaculture based on the perceived use of these substances. They felt that those synthetic substances are used in traditional agriculture and would appear in farm-raised seafoods. Many respondents felt that organic production systems would reduce those concerns.

Figure 23: Consumer Perception that Organic Seafood Would Be Free of Chemicals, Pesticide, and Antibiotics



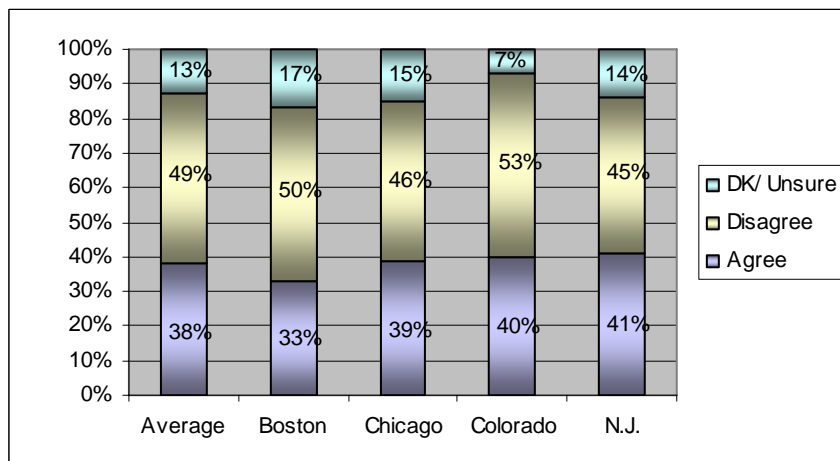
Sixty-eight percent felt that organically grown seafoods would be safer than conventional seafood. Again, the Boston consumers had a higher level of confidence in the wild harvest while New Jersey consumers had the highest level of confidence in organically grown seafoods.

Figure 24: Consumer Perception that Organic Seafood Would Be Safer than Conventional Seafood



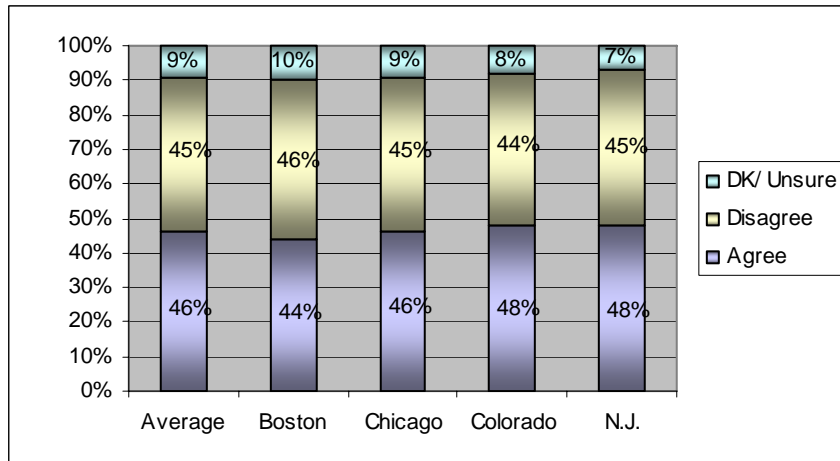
Conventional seafood (49 percent) was thought to have a better flavor than organically grown seafood (38 percent). This reinforces the idea of a prejudice toward wild harvest product over farm raised. When asked about the flavor of farm-raised seafood compared to wild harvest, 52 percent of the respondents in the focus groups chose wild while only 24 percent chose farm-raised as having the best flavor.

Figure 25: Consumer Perception that Organic Seafood Would Have Better Flavor than Conventional Seafood



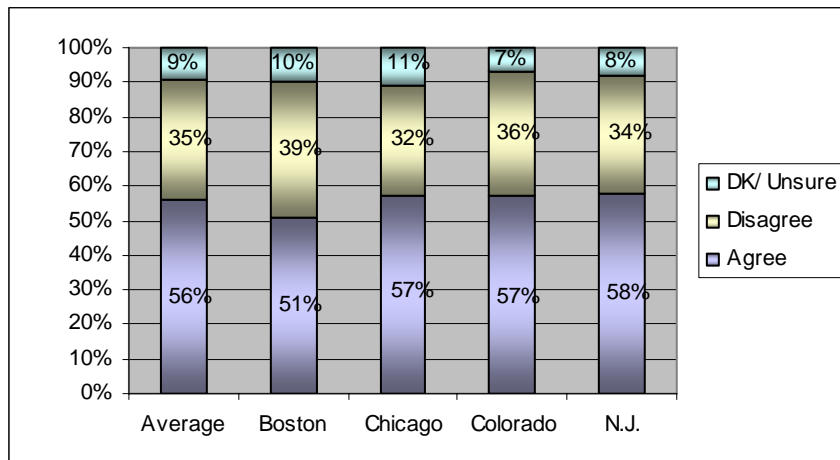
Consumers were evenly divided about the nutritive value of organic seafood (46 percent) compared to wild harvest (45 percent).

Figure 26: Consumer Perception that Organic Seafood Would Be More Nutritious than Conventional Seafood



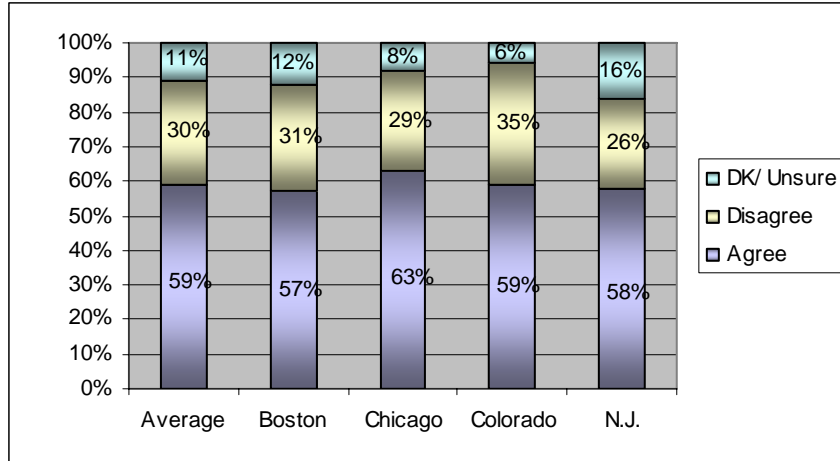
Consumers believed that organic seafood (56 percent) would be of better quality than conventional seafood (35 percent). It is difficult to quantify what a consumer means by the term “quality”. When focus group participants were asked to compare farm-raised and wild harvest seafood in terms of quality, 35 percent felt that farm-raised would be better quality while 47 percent chose wild harvest.

Figure 27: Consumer Perception that Organic Seafood Would Be of Better Quality than Conventional Seafood



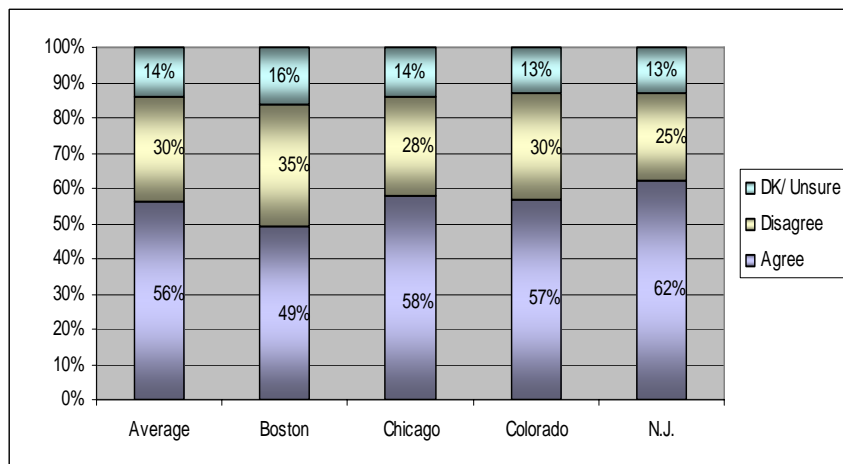
However when it came to environmental impact, 59 percent of those surveyed felt that organic production would be better while only 30 percent felt that conventional was better. During the focus groups 52 percent felt that aquacultured product was better for the environment while 38 percent chose wild harvest.

Figure 28: Consumer Perception that Producing Organic Seafood Would Be Better for the Environment than Conventional Seafood



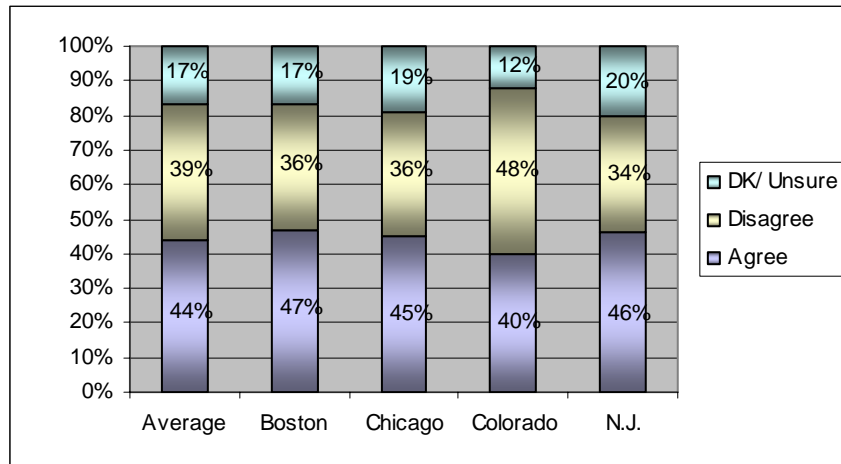
When consumers considered animal welfare, 56 percent felt that organic would be superior to conventional (30 percent). It should be noted that the question asking respondents to list attributes of organic production, without prompts, did not often elicit animal welfare as a concern; rather the response was much greater when consumers were asked the question directly.

Figure 29: Consumer Perception that Organic Seafood Production Considers Animal Welfare More than Conventional Seafood Production



Forty-four percent of those surveyed felt that small farmers would have a competitive advantage in the production of organically-farmed seafood. This number was consistent in all markets.

Figure 30: Consumer Perception that Small Farmers Have a Competitive Advantage in the Production of Organic Seafood



Purchase Patterns

The next question dealt with level of commitment to the purchase of organic foods. Thirteen percent indicated that they purchased organic products as often as they could while 23 percent did not purchase them at all. Again, approximately 25% of the sample for one reason or another does not purchase organic products. Sixty-two percent purchased them from time to time. The question dealt with organic foods in general. These numbers may have changed if the question specifically referenced organically-grown seafood since there is a high level of concern about contaminants in seafood and a general mistrust of aquaculture methods because of water quality issues, perceived use of antibiotics, hormones and genetically modified organisms.

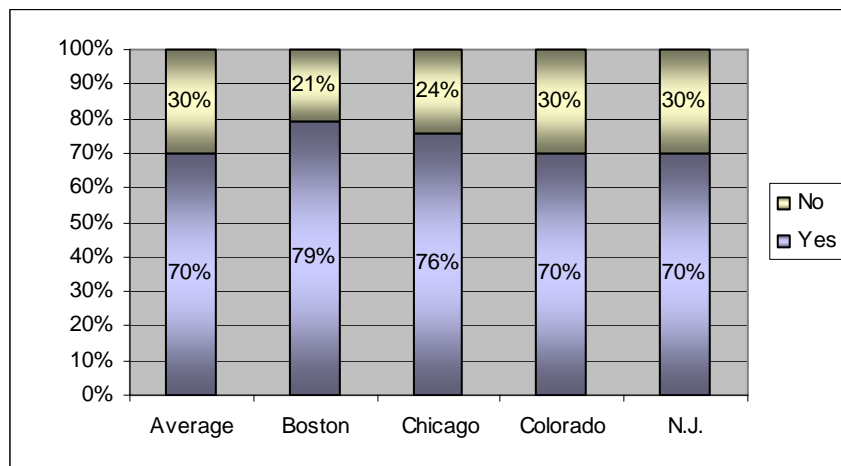
In 2001, Seafish (The Sea Fish Industry Authority a group in the United Kingdom) conducted a similar consumer study in the United Kingdom. In that study, 52 percent of the consumers agreed with the third statement (I'm not convinced about the value of organic products in terms of health and taste benefits).

Table 14: Statement that Best Describes Consumer Attitude and Purchase Behavior with Respect to Organic Foods

Statement	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
I am committed to buying organic products as often as I can.	13%	17%	10%	14%	10%
I purchase organic products from time to time.	62%	61%	61%	60%	66%
I am not convinced of the value of organic products and do not purchase them	23%	19%	28%	23%	23%
Don't know / Unsure	2%	3%	1%	3%	1%

When asked about possible interest in purchasing an organic seafood product, 70 percent of those surveyed responded positively. The level of interest was slightly higher (72 percent) in the focus groups. This might be due to the more general sample used in the telephone survey. In the focus groups, several populations were drawn from upscale stores that offer a wide range of organic products. Those consumers were familiar with organic products and often purchased them.

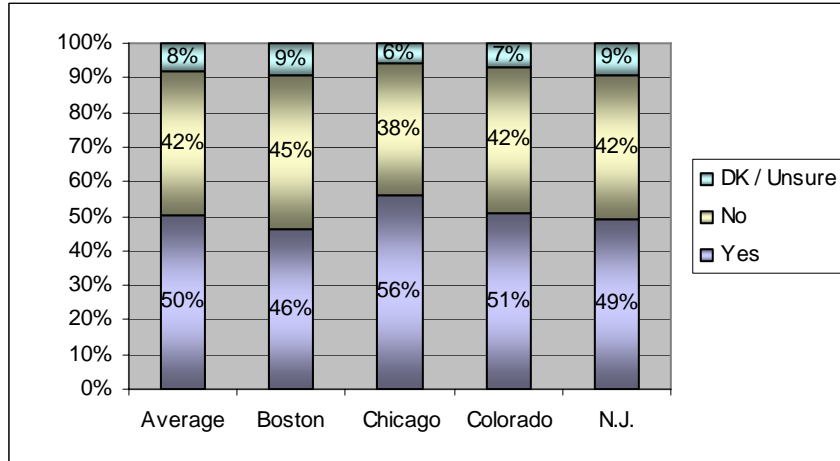
Figure 31: Are Consumers Interested in Purchasing Organic Seafood?



Fifty percent of those surveyed indicated that they would change their shopping location to be able to purchase organic seafood. The overall image or impression of an individual store and the way that seafood is handled in that store has a profound effect on the final purchase decision. Most consumers are very specific about the stores in which they will

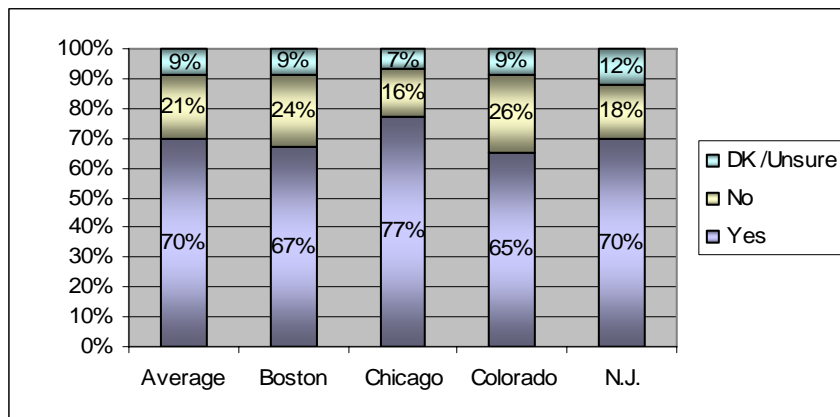
purchase seafood. The availability of organically-grown seafood products promotes a positive image of the store and reinforces the consumers' impression that the store will cater to the customers' wants and needs. This attitude was clearly expressed in the focus group portion of this project and in the earlier study (Gall and O'Dierno, 1992).

Figure 32: Would Consumers Change their Shopping Location to be Able to Purchase Organic Seafood?



Seventy percent of those surveyed indicated that they would trust an organic label for seafood while 21 percent would not. This has been an area of concern since USDA does not have regulations in place to certify aquacultured products as organic. Several foreign certification agencies are providing seals for products including farmed salmon that are reaching American supermarkets. This provides a competitive advantage for those operations. Consumers also expressed an interest in having an external certification for quality and wholesomeness.

Figure 33: Would Consumers Trust an Organic Label for Seafood?



Willingness to Pay

Consumers were then asked how much of a price premium they would be willing to pay for certified organic seafood. Twenty-six percent indicated that they would not be willing to pay a premium for organically grown seafood. Fourteen percent were willing to pay a premium of up to 50 cents or more for an organic product. Twenty-one percent said they would be willing to pay more than 50 percent more per pound. Since the price point was unrealistically low, one dollar per pound, the responses are somewhat biased. The lower price point was selected because it was felt that it was easier for consumers to work with a standard number especially when asked to make a quick response. It provides limited insight into consumer behavior when the price more accurately reflects a much higher true market price.

Table 15: If Seafood Consumers Purchase Regularly Costs \$1, How Much of a Price Premium Are They Willing to Pay for Certified Organic Seafood?

Price Premium	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
None	26%	28%	25%	32%	17%
Yes, I would pay up to 5 cents more per pound	6%	5%	7%	9%	5%
Yes, I would pay up to 10 cents more per pound	12%	12%	17%	10%	7%
Yes, I would pay up to 25 cents more per pound	16%	13%	14%	18%	20%
Yes, I would pay up to 50 cents more per pound	14%	14%	13%	11%	18%
Yes, I would pay more than 50 cents more per pound	21%	22%	19%	18%	26%
Don't Know / Unsure	5%	6%	5%	2%	7%

Profile of Seafood Consumers

To gain a better understanding of consumer purchase behavior, baseline data were developed about seafood purchase in general. When consumers were asked about their average monthly expenditure on seafood, there was no significant difference between

male and female consumers. Throughout this section of the survey, a core group of approximately 25 percent of the sample has emerged as committed seafood consumers who purchased more seafood than average. Forty percent of those surveyed spent less than \$25 a month on seafood purchases. This would seem to indicate that most of those sampled ate far less seafood each month than is recommended by most health and dietary organizations.

Table 16: Monthly Expenditure on Seafood by Gender

Monthly Expenditure	Gender Distribution	
	Female	Male
\$0-25	43%	39%
\$25-50	23%	24%
\$50-75	13%	14%
\$75-More	21%	24%
Total	100%	100%

Monthly expenditures on seafood were not significantly associated with neighborhood of residence. It might have been expected that more consumers in urban areas would spend more on seafood because of the number of outlets available to them and a more cosmopolitan lifestyle.

Table 17: Monthly Expenditure on Seafood by Neighborhood

Monthly Expenditure	Neighborhood		
	Urban	Suburban	Rural
\$0-25	43%	39%	41%
\$25-50	22%	25%	18%
\$50-75	11%	13%	19%
\$75-More	23%	23%	23%
Total	100%	100%	100%

There was a significant association (1 percent) between expenditures on seafood and household size; however this should be expected simply because of the number of people to feed. In larger households, individual food likes and dislikes as well as the cost of center of the plate choices must be considered.

Table18: Monthly Expenditure on Seafood by Household Size

Monthly Expenditure	Household Size					
	1	2	3	4	5	6
\$0-25	58%	41%	39%	34%	27%	33%
\$25-50	17%	28%	30%	20%	19%	13%
\$50-75	8%	11%	10%	21%	22%	17%
\$75-More	17%	20%	21%	25%	32%	38%
Total	100%	100%	100%	100%	100%	100%

There was a significant association (1 percent) between age and monthly expenditure on seafood but this might be anticipated given smaller household size and fixed income limitations.

Table 19: Monthly Expenditure on Seafood by Age

Monthly Expenditure	Age Distribution			
	Up to 35	36 to 50	51 to 65	>65
\$0-25	37%	33%	40%	57%
\$25-50	23%	24%	26%	21%
\$50-75	13%	17%	11%	10%
\$75-More	28%	26%	23%	12%
Total	100%	100%	100%	100%

There was a significant association (1 percent) between ethnicity and seafood expenditure.

Table20: Monthly Expenditure on Seafood by Ethnicity

Monthly Expenditure	Ethnicity			
	African American	Asian /Pacific Islanders/ Latino or Hispanic	Caucasian	Other
\$0-25	20%	28%	43%	48%
\$25-50	22%	28%	24%	9%
\$50-75	18%	17%	13%	9%
\$75-More	41%	28%	20%	35%
Total	100%	100%	100%	100%

There was no significant association between education level and monthly expenditures on seafood. However, when considering interest in purchasing organic seafood, there was an association between education level and interest level.

Table 21: Monthly Expenditure on Seafood by Education Level

Monthly Expenditure	Education Level				
	Some High School	High School	Some College	2 or 4-Year College Degree	Post Graduate
\$0-25	29%	49%	42%	40%	38%
\$25-50	29%	23%	26%	24%	22%
\$50-75	14%	9%	13%	14%	14%
\$75-More	29%	19%	19%	22%	26%
Total	100%	100%	100%	100%	100%

There was a significant association (1 percent) between employment status and monthly expenditures on seafood.

Table 22: Monthly Expenditure on Seafood by Employment Status

Monthly Expenditure	Employment Status				
	Employed full-time	Employed part-time	Retired	Homemaker	Other
\$0-25	33%	54%	51%	48%	50%
\$25-50	26%	14%	23%	27%	18%
\$50-75	14%	10%	13%	11%	14%
\$75-More	28%	23%	13%	14%	18%
Total	100%	100%	100%	100%	100%

There was a significant association (1 percent) between income level and monthly expenditures on seafood. This can be expected because of higher disposable income.

Table 23: Monthly Expenditure on Seafood by Income

Monthly Expenditure	Income		
	\$ Up to 50,000	\$ 50,000-100,000	\$ 100,000+
\$0-25	60%	36%	26%
\$25-50	17%	25%	26%
\$50-75	10%	17%	11%
\$75-More	14%	23%	38%
Total	100%	100%	100%

Profile of Consumers Interested in Purchasing Organic Seafood

There was no significant difference between male (76 percent) and female (73 percent) interest in purchasing organic seafood. Overall men spent slightly more when asked to estimate their monthly spending on seafood for home consumption

Table 24: Interest in Purchasing Organic Seafood by Gender

Interest to Purchase	Gender	
	Female	Male
Yes	73%	76%
No	27%	24%
Total	100%	100%

When considering neighborhood of residence [urban (74 percent), suburban (75 percent), and rural (72 percent)], there was no significant difference in interest in purchasing organic seafood.

Table 25: Interest in Purchasing Organic Seafood by Neighborhood of Residence

Interest in Purchase	Neighborhood		
	Urban	Suburban	Rural
Yes	74%	75%	72%
No	26%	25%	28%
Total	100%	100%	100%

When region of the country was considered; 79 percent of those in Boston expressed an interest in purchasing organic seafood, 76 percent in Chicago, 70 percent in Colorado Springs, and 70 percent in New Jersey.

No significant association was found related to household size, however, in a real world situation, cost and individual likes and dislikes may play a significant role in purchase decision in larger households. This idea was clearly expressed during the focus group sessions. If there is a significant price differential between conventional and organically grown products, sellers might consider targeting high end markets that already carry a wide range of more expensive products. This product placement may deflect some of the price barriers inherent in an elevated price for what is already perceived as a high price product. During the focus group portion of the study, many consumers felt that seafood was more expensive than other center of plate protein choices. On the positive side, in larger households with more children, there may be a concern about contaminants in seafood and organically grown products may have a market edge.

Table 26: Interest in Purchasing Organic Seafood by Household Size

Interest in Purchase	Household Size					
	1	2	3	4	5	6
Yes	69%	69%	77%	84%	76%	67%
No	31%	31%	23%	16%	24%	33%
Total	100%	100%	100%	100%	100%	100%

When considering age, there was a slightly significant difference (1 percent) with younger consumers expressing more of an interest in organic products. Interest in purchase decreased to 56 percent in the over 65 category. However, among those consumers who were interested in purchasing organic seafood willingness to pay was not associated with age.

Table 27: Interest in Purchasing Organic Seafood by Age

Interest to Purchase	Age Distribution			
	Up to 35	36 to 50	51 to 65	>65
Yes	80%	83%	75%	56%
No	20%	17%	25%	44%
Total	100%	100%	100%	100%

Interest in purchasing organic seafood was not significantly associated with ethnicity.

Table 28: Interest in Purchasing Organic Seafood by Ethnicity

Interest to Purchase	Ethnicity			
	African American	Asian/ Pacific Islanders/ Latino or Hispanic	Caucasian	Other
Yes	67%	89%	74%	77%
No	33%	11%	26%	23%
Total	100%	100%	100%	100%

There was a significant association (1 percent) between interest in purchasing organic seafood and education level. This might be explained by a greater interest in health matters and/or higher disposable income.

Table 29: Interest in Purchasing Organic Seafood by Education Level

Interest to Purchase	Education Level				
	Some High School	High School	Some College	2 or 4-Year College Degree	Post Graduate
Yes	25%	61%	67%	78%	82%
No	75%	39%	33%	22%	18%
Total	100%	100%	100%	100%	100%

There was a significant association (1 percent) between employment status and interest in purchasing organic seafood.

Table 30: Interest in Purchasing Organic Seafood by Employment Status

Interest to Purchase	Employment Status				
	Employed full-time	Employed part-time	Retired	Homemaker	Other
Yes	82%	79%	58%	76%	80%
No	18%	21%	42%	24%	20%
Total	100%	100%	100%	100%	100%

Higher income levels also affected interest in purchasing seafood. There was a significant association (10 percent) between income level and interest in purchasing organic seafood. This would be expected given the real or perceived higher cost of organic products. However, among those consumers committed to paying a premium, the anticipated premium was not associated with income level. Factors associated with willingness to pay a premium are explored below.

Table 31: Interest in Purchasing Organic Seafood by Income

Interest to Purchase	Income		
	Up to \$50,000	\$ 50,000-100,000	\$ 100,000+
Yes	73%	78%	85%
No	27%	22%	15%
Total	100%	100%	100%

Consumer Willingness to Pay for Organic Seafood

The next set of questions dealt with willingness to pay a premium for organic seafood. This type of questioning provides only a slight indication of what a consumer would do in an actual purchase situation when actual budget considerations come into play.

Additionally, because the dummy price was \$1.00 per pound, actions would be different when the price more closely mirrors the actual retail price of seafood.

The price differential may reflect a psychological luxury price. If it is more expensive, consumers may perceive the product as being better.

When gender is considered, there is a significant association (5 percent) between gender and willingness to pay a premium for organic seafood. Men were less willing to pay a differential for an organic product than women. This may be reflective of women’s stronger desire to do things that they perceive as being good for their families. In the study by MarketResearch.com 2005, this desire to nurture families was identified as a strong factor in the food purchase decision although it was not directly related to gender.

TABLE 32: WILLING TO PAY FOR ORGANIC SEAFOOD BY GENDER

Willing to Pay	Gender Distribution	
	Female	Male
Not Pay	22%	35%
up to 10¢	20%	18%
up to 25¢	17%	16%
up to 50¢	16%	12%
50¢+	24%	19%
Total	100%	100%

There was no significant association between willingness to pay and neighborhood of residence. Approximately 25 percent of those surveyed expressed a commitment to the purchase of organic seafood while 25 percent had no interest in purchasing organic seafood.

Table 33: Willing to Pay for Organic Seafood by Neighborhood

Willing to Pay	Neighborhood		
	Urban	Suburban	Rural
Not Pay	25%	28%	24%
up to 10¢	24%	18%	11%
up to 25¢	15%	16%	24%
up to 50¢	10%	17%	16%
50¢+	26%	21%	25%
Total	100%	100%	100%

Willingness to pay a premium for organic seafood is significantly associated (10 percent) with household size. This correlation should be anticipated given the perceived high cost of seafood coupled with grocery budget limitations.

Table 34: Willing to Pay for Organic Seafood by Household Size

Willing to Pay	Household Size					
	1	2	3	4	5	6
Not Pay	19%	34%	22%	23%	27%	44%
up to 10¢	23%	13%	20%	27%	15%	19%
up to 25¢	17%	13%	23%	16%	20%	19%
up to 50¢	16%	16%	10%	14%	22%	6%
50¢+	24%	24%	25%	20%	16%	13%
Total	100%	100%	100%	100%	100%	100%

Willingness to pay was not significantly associated with age.

Table 35: Willing to Pay for Organic Seafood by Age

Willing to Pay	Age Distribution			
	UP to 35	36 to 50	51 to 65	>65
Not Pay	29%	22%	28%	29%
up to 10¢	23%	20%	15%	21%
up to 25¢	16%	19%	15%	16%
up to 50¢	11%	13%	19%	13%
50¢+	21%	25%	22%	21%
Total	100%	100%	100%	100%

Willingness to pay was not significantly associated with ethnicity.

Table 36: Willing to Pay for Organic Seafood by Ethnicity

Willing to Pay	Ethnicity			
	African -American	Asian/ Pacific Islanders/ Latino or Hispanic	Caucasian	Other
Not Pay	21%	16%	28%	29%
Up to 10¢	29%	22%	18%	18%
Up to 25¢	15%	19%	17%	18%
Up to 50¢	12%	13%	15%	6%
50¢+	24%	31%	22%	29%
Total	100%	100%	100%	100%

Willingness to pay was not significantly associated with education level.

Table 37: Willing to Pay for Organic Seafood by Education Level

Willing to Pay	Education Level				
	Some High School	High School	Some College	2 or 4-Year	Post Graduate
Not Pay	67%	34%	37%	22%	24%
up to 10¢	0	15%	17%	21%	20%
up to 25¢	0	12%	16%	19%	18%
up to 50¢	0	13%	14%	17%	13%
50¢+	33%	26%	16%	21%	25%
Total	100%	100%	100%	100%	100%

Willingness to pay was not significantly associated with employment status

Table 38: Willing to Pay for Seafood by Employment Status

Willing to Pay	Employment Status				
	Employed full-time	Employed part-time	Retired	Homemaker	Other
Not Pay	26%	25%	35%	21%	6%
Up to 10¢	20%	20%	18%	19%	17%
Up to 25¢	18%	16%	15%	17%	22%
Up to 50¢	13%	13%	17%	15%	28%
50¢+	24%	26%	15%	28%	28%
Total	100%	100%	100%	100%	100%

Willingness to pay for organic seafood was not significantly associated with income level.

Table 39: Willing to Pay for Organic Seafood by Income

Willing to Pay	Income		
	\$ Up to 50,000	\$ 50,000-100,000	\$ 100,000+
Not Pay	27%	27%	24%
up to 10¢	24%	20%	14%
up to 25¢	15%	19%	17%
up to 50¢	17%	11%	14%
50¢+	17%	23%	32%
Total	100%	100%	100%

Opportunities for Market Penetration

Price or the perception of higher prices is a major limiting factor in the purchase of all seafood. The price issue is compounded in the case of organic seafood since many consumers view organic products as being more expensive than conventional products in the same category. Product freshness and visual appeal are important considerations. The consumer needs to perceive an inherently higher value for organic seafood. Creating this perception will require consumer education.

Table 40:

Type(s) of Information that Would Induce Consumers to Purchase More Seafood

Information Type(s)	Percentage				
	Average	Boston	Chicago	Colorado Springs	New Jersey
Lower Price	69%	72%	73%	72%	60%
Product Freshness	67%	69%	66%	68%	65%
Visual Appeal	48%	50%	48%	48%	45%
Knowledgeable Counter Personnel	34%	40%	30%	37%	31%
Availability of Recipes or Information	30%	24%	39%	29%	27%
In-Store Demonstration/Samples	23%	24%	26%	24%	20%
None	5%	4%	4%	2%	9%
Don't Know/Unsure	1%	1%	2%	0%	1%

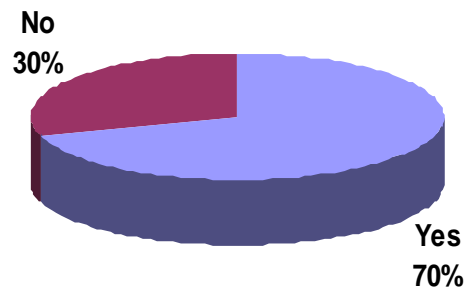
Approximately 25 percent of those sampled described themselves as having a commitment to the purchase of organic seafood. That committed group included members from the full spectrum of those sampled; there was no significant association with neighborhood of residence, age, gender, or ethnicity. There was an association between both household size and income level with willingness to pay. Forty-four percent of those in households of six or more were unwilling to pay any premium for organic products while 27% of those in households of five were unwilling to pay a premium. Thirty-two percent of those reporting income levels of over \$100,000 indicated a willingness to pay 50 cents or more per pound for organic seafood.

Conclusions

Consumer Perceptions

Seventy percent of the consumers surveyed expressed an interest in the purchase of organic seafood and sixty-nine percent expressed a willingness to pay a premium for a seafood product that they perceived as being safer than product that is currently on the market. Consumers who were committed to the purchase of organic food were willing to pay a premium for organically-grown seafood. That willingness was not dependent upon income level or neighborhood of residence. There was a correlation with education level. The more highly educated consumers expressed a greater interest in the purchase of organic seafood.

Figure 34: Interest in Purchasing organic Seafood



Seventy-four percent of the respondents indicated that they were aware of health concerns related to seafood. When asked what those concerns were, sixty-five percent listed mercury, and fifteen percent listed contaminants, in general. Fifty-nine percent of those surveyed believed that an organic seafood product would be antibiotic, chemical and pesticide free. Taken together, this indicates tremendous potential for marketing of organic seafood.

The potential for marketing organic seafood could be improved further with organic labeling. Seventy percent indicated that they would trust an organic label for seafood and many wanted some third party assurance of the quality of seafood products. Currently, many consumers depend heavily on the reputation of the store and the recommendations

of sales associates when purchasing seafood. Most indicated that they limit their purchase of seafood products to specific stores. Overall most consumers had very positive beliefs about organic seafood.

Throughout the survey, approximately 25 percent of the respondents expressed the belief that organic products are not significantly different from conventional products and are not worth any price differential.

A comparable 25 percent were committed to the purchase of organic seafood and believed that it carried an intrinsic value. Those consumers were willing to pay a premium for a product that they perceived as being safer and better for their families.

Purchase Decision

Consumers purchase much less seafood than competing center of the plate protein choices such as chicken, beef and poultry. Although seafood consumption as a discrete category has increased, seafood's share of the animal protein market in the United States remains at 8 percent. The final decision to purchase seafood is dependent upon a wide array of factors working in concert. Forty-nine percent said that the most important reason that they consume seafood is because they like the taste. Forty-one percent of those surveyed indicated that the most important reason that they consume seafood is because they believe it is a healthy food. The overall perception is that the majority of consumers make their purchase decision based on taste and health benefits.

Retail Opportunities

Seventy-two percent of the retailers surveyed in the third phase of this project indicated that their customers prefer wild harvest seafood while 19 percent preferred farm-raised. A number indicated that, although there was an overall preference for wild harvest, price points are important in the final purchase decision. Most felt that their customers want the choice.

Eighty-six percent indicated that lack of consumer knowledge was a significant barrier to increased seafood sales. Fifty-four percent felt that negative media coverage also helped to keep sales down. Only 14 percent felt that their customers actually preferred other center of the plate protein choices. This is an important observation since, at least in the minds of retailers, there is no perceived purchase barrier inherent in the product. Education and information programs can be developed to drive sales.

Retailers did not believe that their customers would buy more seafood if the product was labeled organic, but they did believe that they would pay a premium for organic products. Sixty-nine percent believed that an organic label would increase consumer confidence in the wholesomeness of the product.

Seventy-two percent felt that an organic product would fit into their seafood program. Most felt that it was important to have in-store demonstrations and sampling programs to help bolster seafood sales. They also felt that increased positive media coverage in local newspaper food columns would help raise sales.

Critical issues that need to be addressed to improve the marketability and sale of seafood as a category.

- 1) Consumers continue to have a bias against previously frozen products. This indicates that freshness of seafood is an important attribute that consumers look for as they make purchasing decisions.
- 2) Consumers continue to believe that seafood must be used on the date of purchase or the next day. This belief coupled with concerns about freshness and the quality of frozen products limits the time and place of purchase.
- 3) Consumers continue to place their confidence in the store as the authority on fish quality. This limits consumers' exposure to seafood and thus reduces their likelihood of trying species other than those carried by a specific store. It also emphasizes the need for retail associate training programs.

- 4) To increase consumer confidence in the safety and quality of seafood, labels should be developed that would allow consumers to feel confident in their purchase without the assurance of the store. In the case of organic product, this would require a USDA seal to generate the highest level of confidence. Although products have entered the American marketplace with foreign organic certification, a USDA seal would be the most recognized and accepted by consumers. California has recently banned the sale of any seafood products labeled “organic”, even those certified by accredited foreign agencies, because of the lack of USDA standards. Currently most consumers feel that seafood is not being inspected and the usage of seals whether organic or not would help consumers in identifying products that they perceive as being “safe” and increasing sales.
- 5) For the most part consumers are largely unaware of aquaculture as a food production system. As a result, they tend to associate characteristics of other farming practices, such as hormone usage in poultry farming, into their understanding of aquaculture.
- 6) Consumers overwhelmingly consider seafood as a high priced, luxury alternative rather than an everyday food. As meat and poultry prices continue to escalate, seafood will have the opportunity to be repositioned in the minds of consumers. To increase seafood sales, seafood needs to be positioned as a cost-effective everyday choice that can be prepared quickly and easily.

Critical issues that need to be addressed in positioning organic seafood in the American market

- 1) Overall consumers need to have a better understanding of aquaculture production systems and the application of organic farming principles to those systems.
- 2) Availability of organic seafood may dispel some of the consumers’ concerns about the environmental impacts of aquaculture.

- 3) Availability of organic seafood will help to level the playing field with organic poultry and meat.
- 4) Availability of organic seafood may increase the consumers' comfort level with the product and result in an increase in seafood consumption, which would have a positive impact on the American diet.
- 5) Organic seafood would need to be positioned in those stores in which the largest number of customers perceive organic products as having a high intrinsic value and are willing to pay a premium for the product.

References

Aarset B., Beckmann S., Bigne J., Beveridge M., Bjorndal T., Bunting, M J., McDonagh, P., Mariojouis C., Muir J F., Prothero A., Reisch, L A., Smith A P., Tveteras R. and Young J A., “The European Consumers’ Understanding and Perceptions of Organic Salmon Production”, IIFET 2000 Proceedings, European Union FAIR Programme.

Barnes, Nora Ganim " *Marketing Opportunities in the Shellfish Industry Based on Perceptions, Preferences and Practices of Consumers in New England*", Slade’s Ferry Bank Center for Business Research, the University of Massachusetts Dartmouth, Charlton College of Business, Spring 2003.

Blake, Joe C. “Alternative Farming Methods.” Industry Studies – Agribusiness, The Industrial College of the Armed Forces, 2000.

<http://www.ndu.edu/icafe/industry/2000/agribusiness/agribusiness.htm>

Boehmer, Stephanie; Gold, Mary; Hauser, Stephanie; Thomas, Bill and Young, “Ann. Organic Aquaculture”, AFSIC Notes #5, USDA. January 2005.

Chan, Tak-chuen T., “Study of Current Status and Potential Sustainable Development of the Aquaculture Industry in Hong Kong”, Civic Exchange, July 2005

Franz, Nicole, “GLOBEFISH”, Organic Aquaculture Production, June 2004.
<http://www.globefish.org/index.php?id=2181&easysitestatid=701823204>

Gall, Ken and Linda O’Dierno, “Aquaculture *Marketing Survey: Consumers, Retail Stores, and Food Service in New York and New Jersey*’, Northeastern Regional Aquaculture Center 1992.

Gross, Tania. “Consumer Attitudes towards Farmed Seafood”, Seafish Research and Information, April 2001.

Nutrition Business Journal, “The U.S. Organic Food Industry”, March 2004.

Robertson, Roberta A., Carlsen, Erika L., Lindsay and Bruce E. ‘Taste Test: Summary Report. University of New Hampshire Sea Grant College Program. 1999. NHU-S-99-001 Seafood Choices Alliance, “The Marketplace for Sustainable Seafood: Growing Appetites and Shrinking Seas”, June 2003.

http://www.seafoodchoices.com/pdf/SCA_report_final.pdf

Whole Foods Market. Frequently Asked Questions. August 2002

http://www.wholefoodsmarket.com/issues/org_questions.html.

Willer, Helga and Yussefi, Minou, “The World of Organic Agriculture - Statistics and Emerging Trends – 2004”, International Federation of Organic Agriculture Movements, 2004. ISBN 3-934055-33-8.

Bibliography

DiPietro, Ben “The Public Opinion of Organic Fish”, *IntraFish* 2, no. 8 (August 2004): 8.
Full-text online:

<http://www.intrafish.com/pdf/download/6a2daf07c3abc1068e430b217b62e/2004/8/08.pdf>

DiPietro, Ben “Organic Tilapia: Will it Sell?” *IntraFish* 2, no. 7 (July 2004): 10-12.
Biling-Hwan Lin, Jayachandran N. Variyam, Jane Allshouse, and John Cromartie, “*Food and Agricultural Commodity Consumption in the United States: Looking ahead to 2020*”, *Agricultural Economic Report*, no. AER820. Washington, DC: U.S. Department of Agriculture, Economic Research Service, February 2003.

Charles, E. and P. Paquotte, “Product Differentiation, Labeling and Quality Approach: Developments and Stakes in the French Shellfish Market”, *Aquaculture Economics and Management* 3, no. 2 (Aug 1999): 121-129.

Cherry, Drew “Swiss Retailer Begs for More Organic Seafood”, *IntraFish* 2, no. 4 (April 2004): 4.

Cho, G.K. and J.W. Heath, “Market Assessment for Organic Salmon in British Columbia,” *Proceedings of the 14th IFOAM organic World Congress, “Cultivating Communities*, August 21 – 24, 2002, Victoria Conference Centre, Canada, compiled by Robert Thompson. Ottawa, Canada: Canadian Organic Growers, 2002. 130.

Dimitri, Carolyn, Catherine Greene, and U.S. Department of Agriculture, Economic Research Service, “*Recent Growth patterns in the U.S. Organic Foods Market*”, *Agriculture Information Bulletin*, no. 777. Washington, DC: U.S. Department of Agriculture, Economic Research Service, September 2002.

Full-text online: <http://www.ers.usda.gov>.

Franz, Nicole and Food and Agriculture Organization (FAO) of the United Nations, “*Organic Aquaculture Production*”, Fisheries Industry Division. *June 2004*. Full-text online: <http://www.globefish.org>

Franz, Nicole and Food and Agriculture Organization (FAO) of the United Nations, “*Organic Aquaculture Production*”, Fisheries Industry division. *May 2004*.

Full-text online: <http://www.globefish.org>

Goldburg , Rebecca J. “Comments of Rebecca Goldburg, PH.D, Concerning Organic Certification of Aquaculture Products Presented to the National Organic Standards Board”, National Organic Standards Board Meeting, June 8-10, 1999, Washington, DC, and environmental Defense fund June 8, 1999. Full-text online: <http://www.ams.usda.gov/nosb/archives/minutes/June 99 attachments/12.pdf>

Handley, S., "Organic Oyster Production: a Marketing Opportunity for New Zealand?" *Aquaculture Update* (NIWA) 27, no. ½ (Summer 2000): 1-2.

Harvey, David J "Aquaculture Outlook", Semi-Annual Publication.

Full-text online: <http://usda.mannlib.cornell.edu/reports/erssor/livestock/ldp-aqs/> (accessed Dec. 15, 2004.)

Johnston, R.J., Cathy R. Wessells, H. Donath, and F. Asche, "Measuring Consumer Preferences for Ecolabeled Seafood: an International Comparison," *Journal of Agricultural and Resource Economics* 26, no. 1 (2001): 20-39.

Lockwood, G. S. "Organic Aquaculture-Are There Interested Growers?" *Aquaculture Magazine* 27, no 3 (May/June 2001)

Lockwood, G.S., "Organic Fish: a Major Market Opportunity", *Aquaculture Magazine* 26, no.6 (November-December 2001): 24-28.

Mansfield, B., "From Catfish to Organic fish: Making Distinctions about Nature as Cultural Economic Practice," *Geoforum* 34, no. 3 (2003): 329-342.

Maunder, R., B. Kennard, and D. McCrea, "Organic Meat and Fish: Production, Processing and Marketing", *Handbook of Organic Food Processing and Production*, edited by S. Wright, 2nd ed. Oxford, UK: Blackwell Science, 2000. pp. 92-105.

Mayk, Lauren. "Demand Pushes Organic Foods into the Mainstream," *Herald Tribune*, April 28, 2003.

McGovern, Dan, "Growing Organic Seafood Sales," *IntraFish* 2, no. 5 (August 1997): 14, 16-19.

Myrland, O. and H.W. Kinnucan, "Direct and Indirect Effects of Generic Advertising: A Model with Application to Salmon", *Aquaculture Economics and Management* 5, no. 5/6 (2001): 273-288.

Naturland "*Aquaculture*", edition.V.

Full-text online:http://www.naturland.de/englisch/n4/seite4_5.html (accessed Dec.15, 2004).

Organic Farming Research Foundation, "Frequently Asked Questions about Organic Farming". Full-text online:http://www.ofrf.org/general/about_organic/

Schettler, Renee and Drica Marcus, "Organic Isn't Always Best Label for Salmon", *Newsday.Com*, April 13, 2004.

Full-text online:<http://www.organicconsumers.org/Toxic/organic-salmon.cfm>
Seafood International 18, no. 2, "French Trout Certified Organic", (2003):7

Scheel, Joan “Market Trends: The Health of Organic Foods,” *Prepared Foods* (May 2003).

Staniford, D., “Organically Farmed Salmon is an Oxymoron”, *The Organic Standard* 3 (July 2001): 14.

Stern, M. “Organic Seafood – Gaining Prominence in Europe”, *INFOFISH International* 2 (2002): 8-11.

Sutherland, R.M., “Organic Salmon Production: a Preliminary Analysis of the Economics”, *Aquaculture Economics and Management* 5, no. ¾ (2001): 191-210.

Teisl, M.F., B. Roe, and R.L. Hicks, “Can Eco-Labels Tune a Market? Evidence from Dolphin-Safe Labeling”, *Journal of Environmental Economics and Management* 43, no. 3 (2002): 339-359.

Tournay, Bernadette, “Farms Go Organic”, *Fish Farming International* 29, no 9 (2002): 10.

U.S. Department of Agriculture, “*Briefing Room: Organic Farming and Marketing*”, Economic Research Service. Updated April 22, 2004.
Full-text online:<http://www.ers.usda.gov/Briefing/Organic/index.htm>

Wessells, Cathy R. and D. Holland, “Predicating Consumer Choices for Farmed and Wild Salmon”, *Aquaculture Economics and Management* 2, no. 2 (1998) 48-59.

Wessells, Cathy R. “Ecolabeling and International Seafood Trade: The Roles of Certification Costs and Consumers’ Willingness to Pay”, *Fisheries Economics Newsletter* 50 (2000): 44-49.

Wessells, Cathy R. R.J. Johnston, and H. Donath, “Assessing Consumer Preferences for Ecolabeled Seafood: the Influence of Species, Certifier, and Household Attributes”, *Proceedings From the annual Meeting of the American Agricultural Economics Association*, Nashville, Tennessee, 8-11 August 1999 81, *American Journal of Agricultural Economics* no 5 (1999): 1084-1089.

Appendix –Telephone Survey

1. Do you purchase seafood for home consumption?
 1. Yes
 2. No - THANK THE RESPONDENT AND TERMINATE SURVEY

2. Have you ever purchased aquacultured or farm-raised seafood?
 1. Yes
 2. No – SKIP TO QUESTION 5
 99. Don't know / Unsure – SKIP TO QUESTION 5

3. What kind(s) of aquacultured or farm-raised seafood have you purchased? (*Do not read list*) (*Respondent may choose more than one answer*)
 1. CATFISH
 2. CLAM
 3. COD
 4. CRAB
 5. LOBSTER
 6. MUSSEL
 7. OYSTER
 8. SALMON
 9. SHRIMP
 10. TILAPIA
 11. TROUT
 12. Other (please specify)_____

I am going to read to you different types of fish/shellfish, please tell me if you have purchased the following types of seafood in the past month?

4. In the past month have you bought Trout?
 1. Yes
 2. No
 99. Don't know / Unsure

5. In the past month have you bought Oysters?
 1. Yes
 2. No
 99. Don't know / Unsure

6. Clams?
 1. Yes
 2. No
 99. Don't Know / Unsure

7. Tilapia?
1. Yes
 2. No
 99. Don't know / Unsure
8. Hybrid striped bass?
1. Yes
 2. No
 99. Don't know / Unsure
9. Salmon?
1. Yes
 2. No
 99. Don't know / Unsure
10. Catfish?
1. Yes
 2. No
 99. Don't know
11. Mussels?
1. Yes
 2. No
 99. Don't know / Unsure
12. Shrimp?
1. Yes
 2. No
 99. Don't know / Unsure
13. Crayfish?
1. Yes
 2. No
 99. Don't know / Unsure
14. What is the most important reason you consume seafood?
1. I like the taste
 2. I believe it is a healthy food
 3. I believe it is a low calorie food
 4. I believe it is easy to prepare
 5. I like the gourmet appeal
 6. Other [*Do not read*] *Specify: What would you say is the most important reason for consuming seafood?* _____
 99. Don't know / Unsure

15. What types of information would induce you to purchase seafood or purchase seafood more often? (*Respondent may choose more than one answer*)

1. Product Freshness
2. Visual Appeal
3. Lower price
4. Knowledgeable Counter Personnel
5. Availability of Recipes or Information
6. In-Store Demonstration/Samples
7. None [*Do not read*]
99. Don't know / Unsure

16. Do you believe seafood is being inspected for quality and safety?

1. Yes
2. No
99. Don't Know/ Unsure

I am going to read you three statements, please select one statement that conveys the highest quality.

17. Which of the following would you say conveys the highest quality?

1. Imported
2. Locally Grown
3. Farm-raised in the USA
99. Don't know / Unsure

18. And if you had to choose between: *IF ASKED: Environmentally-Friendly practices are those that prevent overfishing and protect the environment.*

1. Organic
2. All Natural
3. Environmentally-Friendly
99. Don't know / Unsure

For the following terms, please tell me whether the term better describes FARM-RAISED or WILD-CAUGHT seafood.

19. Which is more environmentally friendly - *FARM-RAISED or WILD-CAUGHT*

1. Farm-Raised
2. Wild Caught
99. Don't know / Unsure

20. Which tastes better - *FARM-RAISED or WILD-CAUGHT*

- Farm-Raised
- Wild Caught
- Don't know / Unsure

21. Which has better year-round availability - *FARM-RAISED* or *WILD-CAUGHT*
1. Farm-Raised
 2. Wild Caught
 99. Don't know / Unsure
22. Which is more expensive - *FARM-RAISED* or *WILD-CAUGHT*
1. Farm-Raised
 2. Wild Caught
 99. Don't know / Unsure
23. Which is better quality - *FARM-RAISED* or *WILD-CAUGHT*
1. Farm-Raised
 2. Wild Caught
 99. Don't know / Unsure
24. Which is safer - *FARM-RAISED* or *WILD-CAUGHT*
1. Farm-Raised
 2. Wild Caught
 99. Don't know / Unsure
25. Have you noticed Country of Origin Labeling (COOL) of seafood at the supermarket?
1. Yes
 2. No – *BRIEFLY EXPLAIN: it is a new requirement from the USDA that supermarkets display the country of origin of the seafood and whether it is farm-raised or wild-caught.*
 99. Don't know / Unsure
26. Do you think Country of Origin Labeling (COOL) of seafood is useful?
1. Yes
 2. No
 99. Don't know / Unsure
27. Does Country of Origin Labeling (COOL) influence your purchase decision(s) with seafood?
1. Yes
 2. No
 99. Don't know / Unsure
28. Would an “Environmentally-Friendly” label affect your purchasing decision(s)?
1. Yes
 2. No
 99. Don't know / Unsure

29. Are you aware of any health concerns with seafood?
1. Yes
 2. No – SKIP TO QUESTION 32
 99. Don't know / Unsure – SKIP TO QUESTION 32

30. And what concerns would those be? (*Do not read list*) (*Respondent may choose more than one answer*)

1. Cholesterol
2. Mercury
3. Cadmium
4. PCBs
5. Bacteria
6. Viruses
7. Red tide
8. Contaminants
9. Colorants
10. GMO
11. Food Poisoning
12. Others (please specify)_____

For the next two questions, we want to know your thoughts on organic foods in general.

31. Please tell me some characteristics you believe make a food an organic food. (*Do not read list*) (*Respondent may choose more than one answer*)

1. Pesticide/antibiotic free
2. Safer
3. Better taste
4. Better quality
5. Better for the environment
6. More nutritious
7. Animal welfare standards
8. None
9. Other (please specify)_____

32. Which of the following statements best describes your purchase behavior with respect to organic foods?

1. I am committed to buying organic products as often as I can.
2. I purchase organic products from time to time.
3. I do not purchase organic products.
99. Don't know / Unsure

Now I'm going to ask you few questions relating to organic seafood to better understand your feeling towards it.

33. Would you be interested in purchasing organic seafood?

1. Yes
2. No – SKIP TO QUESTION 37
99. Don't know

34. Would you change the location where you purchase seafood to be able to purchase organic seafood?

1. Yes
2. No
99. Don't Know / Unsure

35. Suppose your favorite seafood that you purchase regularly costs \$1 per pound. Would you pay more for organic certified?

1. No
2. Yes, I would pay up to 5 cents more per pound
3. Yes, I would pay up to 10 cents more per pound
4. Yes, I would pay up to 25 cents more per pound
5. Yes, I would pay up to 50 cents more per pound
6. Yes, I would pay more than 50 cents more per pound
99. Don't know / Unsure

36. Would you trust an organic label for seafood?

1. Yes
2. No
99. Don't know / Unsure

For the next few questions please let me know if you, agree or disagree with the statement that I will read:

37. I believe organic seafood would be free of chemicals, pesticide, and antibiotics.

1. Agree
2. Disagree
99. Don't know / Unsure

38. I believe organic aquaculture would be safer than conventional seafood.

1. Agree
2. Disagree
99. Don't know / Unsure

39. I believe organic seafood would have better flavor than conventional seafood.

1. Agree
2. Disagree
99. Don't know / Unsure

40. I believe organic seafood would be more nutritious than conventional seafood.
1. Agree
 2. Disagree
99. Don't know / Unsure
41. I believe organic seafood would be of better quality than conventional seafood.
1. Agree
 2. Disagree
99. Don't know / Unsure
42. I believe that producing organic seafood would be better for the environment than conventional seafood.
1. Agree
 2. Disagree
99. Don't know / Unsure
43. I believe organic seafood production considers animal welfare more than conventional seafood production.
1. Agree
 2. Disagree
99. Don't know / Unsure
44. I believe that small farmers have a competitive advantage in the production of organic seafood
1. Agree
 2. Disagree
99. Don't know / Unsure
45. In a typical month, how many times do you buy seafood for home consumption?

46. On average, how much do you spend on seafood per visit?
(rounded to the nearest dollar) \$ _____

You've been very patient; I just have few final questions for us to classify your answers.

47. **INTERVIEWER: RECORD RESPONDENT'S GENDER BY OBSERVATION:**
1. Female
 2. Male

48. Do you consider your neighborhood to be Urban, Suburban or Rural?
1. Urban
 2. Suburban
 3. Rural
 99. Don't know / Unsure
49. Including yourself, how many people live in your household? _____.
50. What is your age bracket?
1. 20 or less
 2. 21 to 35
 3. 36 to 50
 4. 51 to 65
 5. Over 65
 0. Refused
51. To which racial or ethnic group(s) do you most identify? (*Respondent may choose more than one answer*)
1. African-American (Non-Hispanic)
 2. Asian/Pacific Islanders
 3. Caucasian (Non-Hispanic)
 4. Latino or Hispanic
 5. Native American, Aleut or Aboriginal Peoples
 6. Other (please specify)
 0. Refused
52. Are there any other languages spoken in the household besides English? (*Do not read list*) (*Respondent may choose more than one answer*)
1. No
 2. Spanish
 3. French
 4. German
 5. Chinese
 6. Japanese
 7. Hindi
 8. Other (please specify)_____
 0. Refused
53. What is the highest level of education you have completed?
1. Some high school
 2. High school
 3. Some College
 4. 2 or 4-year college degree
 5. Post graduate degree
 0. Refused

54. Which of the following best describes your current situation?

1. Employed full-time
2. Employed part-time
3. Retired
4. A homemaker
5. A student
6. Unemployed but looking for work
0. Refused

55. What is your approximate household income before taxes?

1. Under \$25,000
2. \$25,000 up to \$50,000
3. \$50,000 up to \$75,000
4. \$75,000 up to \$100,000
5. \$100,000 up to \$150,000
6. \$150,000 up to \$200,000
7. Greater than \$200,000
0. Refused