

New Jersey Agricultural Experiment Station
P-02275-1-06
January, 2006

**Identification and Evaluation of Viable Market Opportunities
For Organically-Grown Aquatic Products:
Results from the Focus Group Meetings**

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



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

December 2005

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.

Special thanks to the following retailers who provided enormous assistance to the project:

Wegman's
Wild Oats
Foodtown
Stop and Shop
King's Sooper

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

	Page
Acknowledgements.....	i
Table of Contents.....	ii
List of Tables	iii
List of Figures.....	iv
Executive Summary	v
1. Introduction.....	1
2. Research Objectives.....	4
3. Methodology.....	5
4. Focus Group Results.....	7
4.1. The Seafood Shopping Experience.....	9
4.2. Product Labeling.....	11
4.3. Country of Origin.....	16
4.3B. Eco-Friendly Labeling.....	17
4.4. Organic Labeling	18
4.5. Consumer Perceptions of Organic Foods	19
4.6. Consumer Perceptions of Organically – Grown Seafood.....	20
4.7. Most Commonly Consumed Seafood Products	23
4.8. Pricing.....	24
4.9. Seafood Inspection.....	25
4.10. Trying New Species.....	25
4.11. Seafood and Health.....	26
4.12. Seafood and Food Information	28
4.13. Food Miles	28
5. Conclusions.....	30
6. References.....	32
7. Bibliography	33
8. Focus Group Questionnaire	36

List of Tables

	Page
Table 1: Consumer Sales and Growth Rates of Organic Foods, 1997-2003	3
Table 2: Response to Terms Identifying Farm-Raised Seafoods.....	12
Table 3: Consumer Perceptions about Seafood Type that Conveys the Highest Quality	13
Table 4: Consumer Preference for Domestic and Imported Seafood	16
Table 5: Perceptions about Country of Origin that Convey the Highest Quality	17
Table 6: Effect of Eco-Friendly Labeling on Purchasing Decision(s).....	17
Table 7: Consumer Perceptions about Ecologically Sound Seafood Production Methods that Convey the Highest Quality	17
Table 8: Organically Grown Terminology that Conveys the Highest Quality	18
Table 9: Statement that Best Describes Consumer Attitude towards Organic Foods.....	19
Table 10: Statement that Best Describes Attitude towards Organic Seafood.....	20
Table 11: Reasons for Wanting to Purchase Organic Seafood	22
Table 12: Reasons for Not Wanting to Purchase Organic Seafood	23
Table 13: Most Commonly Consumed Seafoods	24
Table 14: Package Label that Consumers Would Most likely Select in the Supermarket.	26
Table 15: Consumers Likelihood of Purchase if They Were Informed About Regions that are Known for High Quality and Availability	27
Table 16: Perceptions about Seafood Origin that Convey the Highest Quality	28

List of Figures

	Page
Figure 1: Locations of Target Markets	6
Figure 2: Primary Location of Seafood Purchase for Home Consumption	10
Figure 3: Frequency of Seafood Purchase	11
Figure 4: Consumer Preference for Wild and Farm-Raised	12
Figure 5: Seafood Production Terminology that Conveys the Highest Quality	14
Figure 6: If Available, Would Consumers Purchase Organic Seafood?.....	21

Executive Summary

Phase I-Consumer Focus Groups

The United States aquatic farming community has expressed a keen interest in the development of long-term sustainable organic farming systems. This interest was clearly demonstrated by the draft organic standards that have been provided to the National Organic Standards Board by the National Organic Aquaculture Working Group. Organic production offers tremendous potential for small farmers who would like to differentiate their products and develop viable markets for premium products. Select 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.

For the consumer, the availability of organically grown aquatic products will increase their comfort level and could, 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.

Currently, there are no accepted standards in the United States for the production of organic seafood. This lack of standards means that imported product can bear the seal of the foreign certifying agency and be sold as organic in all states with the exception of California. 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.

Availability of such 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.

To best achieve the goals of the overall project and develop a meaningful survey instrument to be utilized with a larger sample (800 respondents) during Phase II of the project, focus groups were held in four locations: Central New Jersey; Boston,

Massachusetts; Chicago, Illinois; and Colorado Springs, Colorado. In addition to gaining qualitative insight into consumer attitudes and perceptions regarding organically farmed aquatic products, a short questionnaire was administered at the completion of each focus group to gather quantitative information. Respondents' views on seafood varied often depending on their geographic location of residence.

Overall, respondents were enthusiastic about the availability of organic seafood. A large majority (72 percent) indicated they would purchase organic seafood if presented with the opportunity (Figure 6). However, there was reluctance to totally commit. Fifty-two percent of the participants felt that they would purchase those products from time to time, while 28 percent were not convinced of the value of the products and would not purchase them (Table 10). A major concern was the cost of an organic product since many consumers already view seafood as an expensive alternative.

Aquaculture production systems raised additional concerns about the use of synthetic hormones and genetically modified organisms. Ninety-five percent of the consumers in the focus groups felt that a major advantage of organic fish/shellfish was that it was chemical/pesticide free and this was a major force driving interest in the purchase of organic products. Other reasons for wanting to purchase organic seafood were that it: is antibiotic free (87 percent); has superior flavor (62 percent); is ecologically sound (59 percent); and has better quality (59 percent). (Table 11).

Reasons for not wanting to purchase organic seafood were that it: is too expensive (67 percent); has no credible standards (53 percent); is not worth the price differential (40 percent); and has limited availability (13 percent). Thirteen percent of those surveyed indicated that they were not concerned about additives, chemicals or residues (Table 12). Because they are not concerned, most felt that purchasing organic product was not worth the price differential.

Consumers showed an overall preference for wild-caught seafood products as many felt it is superior in quality and taste compared to farm-raised. Fifty-one percent

indicated that they strongly prefer wild and 27 percent indicated that they somewhat prefer wild-caught seafood (Figure 4). Respondents also indicated preference for domestic seafood products. Fifty-nine percent indicated that they strongly prefer domestic and 21 percent indicated that they somewhat prefer domestic while 14 percent had no preference (Table 4). However, in the broader telephone survey, when asked about whether country of origin would influence the purchase decision, only 60 percent said yes.

Most people continue to consume less seafood than is recommended for a well balanced diet. To change this dynamic will require a well-directed consumer education campaign especially in terms of farm-raised and organically-grown seafood products.

1. Introduction

For the purposes of this report, the term seafood is used to characterize all freshwater and saltwater finfish and shellfish used for food. The inclusion of bivalve molluscan shellfish raised on leased beds as a farm-raised product differs from state to state, but for the purposes of this report, those products are considered farm-raised.

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, and escalating health care costs. Although dietary strategies are in place that could significantly change this statistic, the number one cause of death in the United States remains coronary heart disease. 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 list reflects the growing importance of aquaculture in supplying the American market. The fish farming community increasingly supplies shrimp, salmon, catfish, tilapia and clams. Many speculate that this 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 century 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 and in 2002, 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 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 not the resultant product.

The sale of organic food grew by more than 20 percent year after year in the 1990’s and in 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).

Table 1: 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. When compared to other organic foods, organic aquaculture is still 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 the 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 rendered 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. 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 indicated 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.

2. 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 that 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.

3. 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 (landlocked 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 focus groups, 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. Price points for those products also were considered.

Figure 1: Locations of Target Markets



The project took a drill-down approach in which focus group/survey participants were asked about seafood products in general, farm-raised seafood products and lastly, organically-grown seafood products. This provides specific information about organically grown seafood products embedded in the general mindset toward seafood. In several instances, survey questions were developed to mimic those questions asked in other similar studies to provide benchmarks.

Local supermarkets in each of the target markets hosted focus groups. Sites included both upscale stores that carry a broad range of organic products and cater to a health-conscious consumer as well as more generic stores. Participants in the focus groups received dinner and a \$20 store gift card. The focus groups were conducted in the evening to allow participation by a greater range of shoppers. Most participants enjoyed the opportunity to share their views and were forthcoming in their answers. At the conclusion of each focus group, participants were asked to complete a short questionnaire. The questionnaire helped to verify their answers especially about willingness to pay. Consumers were more apt to indicate greater willingness to pay during group discussions but then reconsidered when completing the questionnaire.

The focus groups provided direction for a larger telephone survey in each of the target markets. Two hundred telephone surveys were completed in each of the four target markets for a total of 800 surveys. The telephone surveys were limited to individuals who actually purchase seafood for home consumption.

At the completion of the consumer portion of the project, a nationwide survey of retailers was undertaken. Two hundred and fifty-seven questionnaires were mailed to retail seafood executives. Each survey was accompanied by a postage paid return envelope. The return was better than expected (13 percent) and many respondents were extremely forthcoming about their attitudes and concerns regarding seafood products including aquacultured and organically grown products.

4. Focus Group Results

The first phase of the project included a series of consumer focus groups held in four target markets-Central New Jersey, Boston, Chicago and Colorado Springs. The focus groups included upscale, health-conscious and more generic shoppers. A portion of the focus group interaction was devoted to developing a better understanding of those terms and labels that conveyed quality in the minds of the consumer. This information

can be used in developing product-positioning strategies, packaging, and marketing materials.

The focus groups were composed of a diverse population. Twenty-five percent reported annual household incomes over \$100,000, 20 percent between \$50,000 and \$75,000, and 14 percent between \$75,000 and \$99,999. Twenty percent chose not to answer. Forty-seven percent had children living at home. Forty-one percent had a household size of 3, while 23 percent had households of 5. Seventy-seven percent of the participants were female and 23 percent male. Twenty-seven percent were between 55 and 64 years of age, 23 percent between 35 and 44, 21 percent between 45 and 49 and 16 percent between 50 and 54. When asked about average monthly expenditures on seafood, 42 percent estimated between \$25 and \$50, 37 percent between \$50 and \$100, 7 percent more than \$150 and 5 percent between \$100 and \$150.

Since most of the consumers in the focus groups were recruited at the seafood counter, almost all felt comfortable preparing seafood at home and purchased seafood at least once a week. The shoppers from the upscale stores were more familiar with organic products and most felt that those products had a high intrinsic value. Shoppers from the more generic markets were unconvinced. Almost all of the participants were eager to learn more about seafood. Several even arrived at the focus group meetings armed with written lists of questions.

Consumers in each of the groups had distinct attitudes and purchase habits. The Boston participants viewed seafood as a traditional dish. Almost all participants indicated that they had grown up eating fish and that it was part of their family background. A number indicated that they purchased fish at the supermarket but also went to a local fish market where the fish was “fresh off the boat.” Retail chain executives and seafood counter associates actively participated in the Boston focus groups.

Colorado Springs consumers were concerned about how the product reaches inland markets. Many were transplants from other parts of the country and wanted to see a greater variety of products available in the marketplace. This group expressed major concerns about freshness most likely as a result of the inland location.

The Chicago participants were very health conscious but expressed concerns about the price of seafood and felt that price limited their ability to purchase more seafood.

The New Jersey groups were the most diverse. One group clearly saw an advantage to organic labeling while the second group felt that it wasn't worth the extra cost. Participants had a very good idea of the price of seafood products and could provide an accurate range of price for a particular species. This was especially true for the more exotic and higher priced species most likely as result of "sticker shock".

4.1. The Seafood Shopping Experience

Most consumers continue to purchase seafood as part of their regular grocery shopping at the supermarket. The Colorado group was evenly divided between natural food stores and supermarkets. This might be a factor of the fewer number of food outlets in the area which would limit place of purchase options. Many indicated that they purchase seafood on the reputation of the store. The reputation of the store essentially becomes the brand. The counterperson and his/her interaction with the customer continue to be a driving force behind seafood purchase. A comment that reverberated was, "I trust what the sales associate suggests." In almost all of the focus groups, consumers mentioned knowledgeable sales associates as an important consideration in making seafood purchases. People relied heavily on the expertise of those individuals and it is an important area where stores might consider increased training to boost sales.

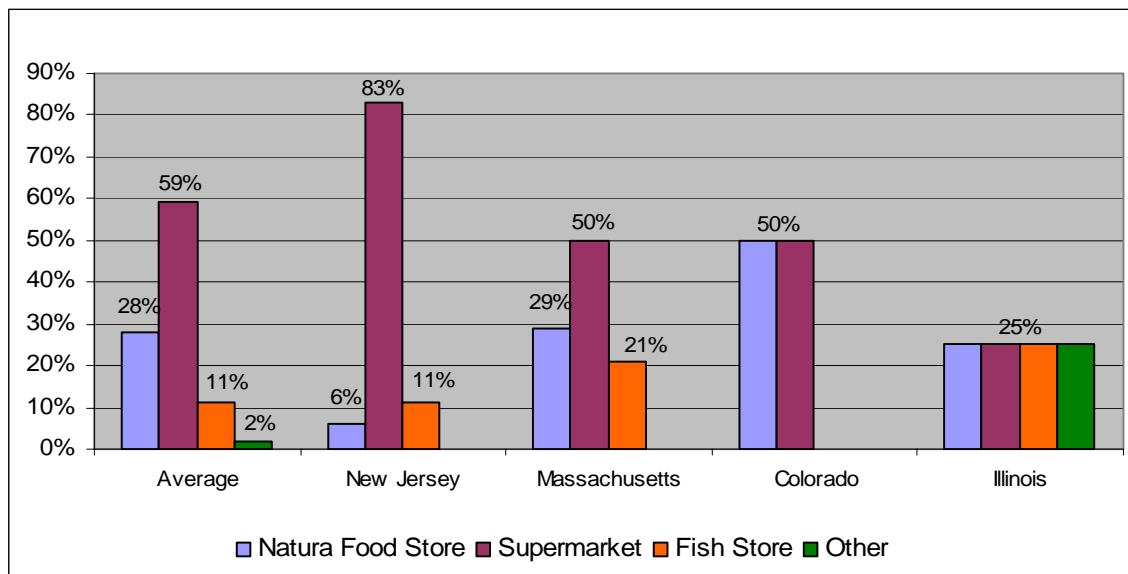
Many consumers indicated that they shopped once a week and this limited their ability to purchase seafood since they use it on the day of purchase or the next day.

There remains a major bias against frozen seafood products. Many consumers do not understand that some products sold at the fresh counter are previously frozen. Even when the product was clearly labeled as “previously frozen,” as in the case of shrimp, the majority of the participants felt that this practice was deceptive.

It is interesting to note that in at least one upscale store that featured organic/natural products, there was a great deal of consumer interest in the opening of a national chain known for both natural/organic foods and lower prices in their neighborhood. Clearly, price is a major consideration for many seafood users. Although many participants expressed an interest in purchasing seafood at a natural foods/upscale market, many felt that the prices were prohibitive for routine purchases.

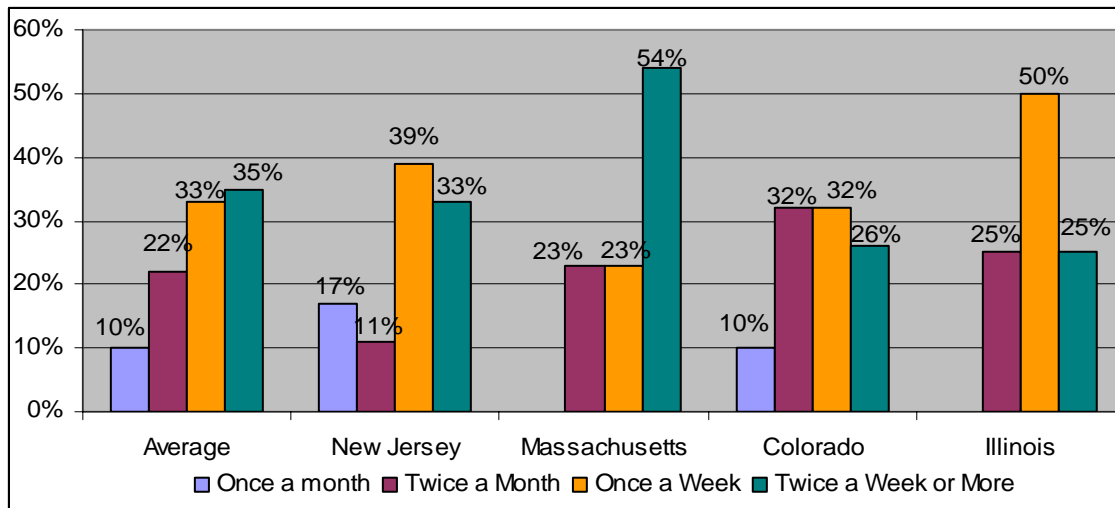
Some of the inland participants felt that they would like to see “fresher fish” and a better variety at the seafood counter. Several commented that they were tired of seeing the same old catfish, salmon and rainbow trout with a smattering of mussels and hard clams that did not look appetizing. There was some concern about seeing previously frozen products in the fresh case.

Figure 2: Primary Location of Seafood Purchase for Home Consumption



Most participants purchase seafood in conventional supermarkets. This is especially the case for many of the respondents in New Jersey. In New Jersey, over 83 percent of the respondents indicated that they purchase seafood in supermarkets. It is interesting to note that, on average, only 11 percent shopped at fish stores even though the area has a large number of small fish markets. Those participants that did shop at a fish store felt that the product was fresher and better than at the supermarket (Figure 2).

Figure 3: Frequency of Seafood Purchase



Since focus group participants were recruited at the seafood counter, most were frequent purchasers of seafood for home consumption. Sixty-eight percent of the participants purchased seafood at least once a week for home consumption (Figure 3). During the focus group sessions, many of the participants indicated that they purchased a wide variety of seafoods. People were excited about seafood and talked about calamari, escargot and other more exotic species.

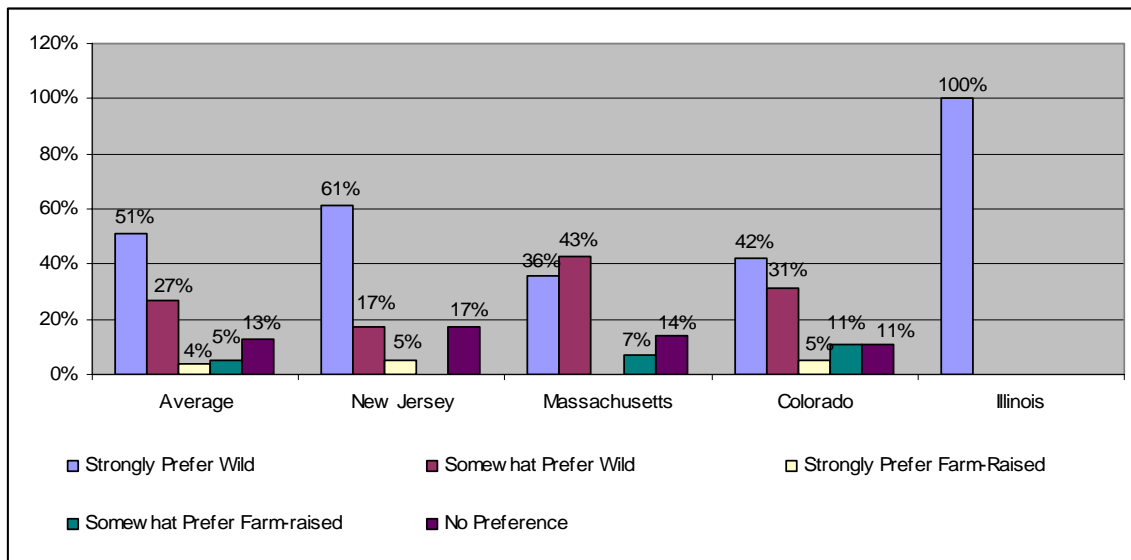
4.2. Product Labeling

Seventy-eight percent of the participants indicated that they preferred wild seafood, only 9 percent preferred farm-raised, and 13 percent had no preference (Figure 4). Although this is a strongly expressed preference, price is an important determining factor in actual purchase decision. Generally, prices for farmed seafood are lower than

those for wild caught product. The term farm-raised conjured up antibiotics, hormones, GMOs, and all the negative issues that have been raised about other farm-raised products. Typical comments were;

“I prefer wild. I don’t understand why farm-raised salmon lose their color and have to be dyed to be sold. Are the fish okay?”

Figure 4: Consumer Preference for Wild and Farm-Raised



The next set of questions dealt with terms that are commonly used to describe aquacultured products.

Table 2: Response to Terms Identifying Farm-Raised Seafoods

Fish/Shellfish Production Process	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
Aquacultured	54%	66%	50%	35%	100%
Cultured	20%	17%	25%	25%	0
Farm-Raised	26%	17%	25%	40%	0
Total	100%	100%	100%	100%	100%

Although it might be thought that the term “farm-raised” would have a better resonance with the consumer, there was actually a preference for the term “aquacultured”

in the focus groups. USDA country of origin labeling requirements use the term farm-raised. In the Gross; 2001 study, active environmentally-concerned consumers viewed the term “farmed” as implying too much human intervention, but overall it received a positive response. Farm-raised might imply more of an active involvement with the animals and most people don’t make this association with fish. “Cultured” is a term often used by the molluscan shellfish industry. Many industry members believe that it conveys an up-market image, however this was the least popular term in the focus group component of the project.

In the next set of questions, the terms organically grown and natural were added to the mix.

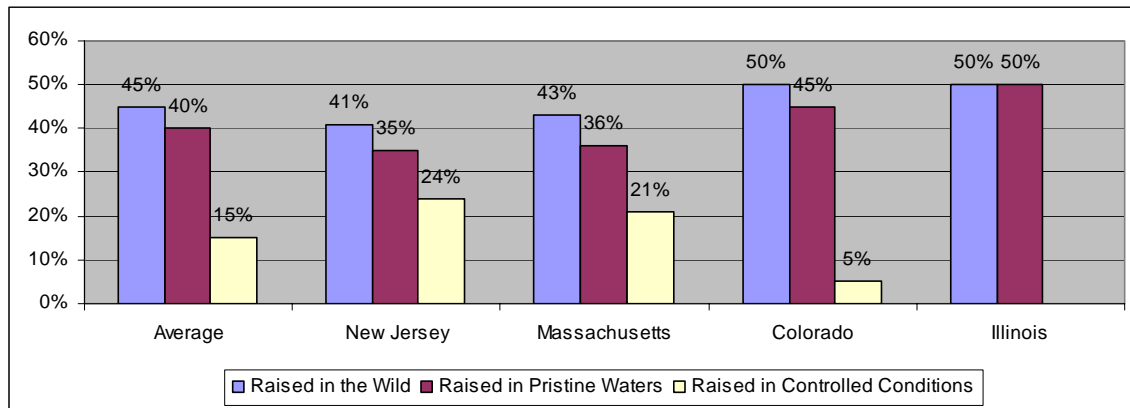
Table 3: Consumer Perceptions about Seafood Type that Conveys the Highest Quality

Fish/Shellfish Type	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
Organically grown	24%	28%	20%	25%	25%
Harvested from the Wild	53%	50%	47%	60%	50%
All Natural	23%	22%	33%	15%	25%
Total	100%	100%	100%	100%	100%

When asked which term conveys the highest quality, consumers in each of the focus groups preferred “harvested from the wild.” This may be a reflection of the food press that tends to promote the idea that wild harvest is preferable to farm-raised product because it is perceived to have a more distinct taste. Since consumers in coastal states might hear more about marine recreational fishing advisories issued based on the level of contaminants in sportfish, there could be some transference between those advisories and consumption of commercial fish. Concerns about those contaminants might be expected to drive sales toward organic products; however, this wasn’t evident in the responses. Although there are freshwater advisories in inland states, much of the seafood sold at retail is comprised of marine species (Table 3).

When asked what the term organic means, consumers responded with natural, whole, unprocessed, no pesticides, natural fertilizers, and no sprays. About seventy-eight percent of the consumers polled indicated that they had purchased organic products (Table 9). All agreed that organic products cost more. There were differing opinions about whether or not they were worth the price differential. Most had never seen a seafood product labeled organic, although in several of the stores in which focus groups were conducted such products were on display at the seafood case.

Figure 5: Seafood Production Terminology that Conveys the Highest Quality



Again in this triplet, consumers preferred the term wild, however, using the adjective pristine to describe the growing waters considerably improved consumer perceptions (Figure 5). This is similar to the strategies employed by bottlers of spring water. Using this type of positive terminology may be an important consideration in positioning farm-raised seafood products in the marketplace. The Chicago consumers, now that the term “raised” was added to the wild connotation, were now equally divided between “raised in the wild” and “raised in pristine waters.” Consumers did not like the term “raised in controlled conditions”. This is similar to the 1992, Gall and O’Dierno study, in which consumers indicated that they felt raising fish in aquaculture facilities was somehow artificial and carried too much of a factory connotation. During the discussion portion of the focus groups, there were numerous concerns about the quality of the water in aquaculture operations. This is clearly an area where consumer education is required and

the use of labeling that reinforces the idea of clean water may influence purchase decisions.

Many consumers continue to have a bias against farm-raised. They were concerned about the use of antibiotics, drugs, and hormones in the production of seafood in aquaculture facilities. Most were familiar with concerns about color additives. Negative press on color additives and presence of PCBs in farmed salmon has had a lasting impact on consumers especially those heavy users of seafood. In several groups, consumers expressed concerns about “genetically altered” foods.

“It’s not what nature intended”.

“Wild is better because of the lack of human involvement.”

“Chickens are not housed in containers.”

“Wild seems more natural. Less contrived.”

To gain mainstream acceptance, the aquaculture industry will have to undertake an educational campaign to make consumers feel more comfortable with the product. Many consumers expressed concerns about the crowded conditions in aquaculture facilities and the quality of the water.

“I’ve seen those facilities and the fish are swimming in dirty water. It’s unhealthy”

There were also concerns about the fish feed. A number of people said that the feeds were unnatural. At least three people felt that fish-eating fish was unnatural. It was somehow cannibalistic. Others were concerned about diets comprised of soy meal and corn as being unnatural. There was no discussion of possible implications for marine ecosystems of feeding fish to higher-level predators although this issue is often a major criticism of aquaculture practices raised by environmental groups. Discussions centered entirely on the diets being unnatural.

4.3. Country of Origin

Consumers had strong positive reactions to product that was labeled with a USA origin. Fifty-nine percent strongly preferred domestic product. Twenty-one percent preferred imported while 14 percent had no preference (Table 4). However, during the discussion, most consumers had not noticed country of origin labeling at the seafood counter although the stores in which the participants were recruited clearly labeled their products. In spite of a clear bias toward purchasing USA product, the vast majority of the seafood sold in this country is imported.

Table 4: Consumer Preference for Domestic and Imported Seafood

Preference	Percentage				
	National Average	New Jersey	Massachusetts	Colorado	Illinois
Strongly prefer domestic	59%	55%	86%	37%	75%
Somewhat prefer domestic	21%	17%	7%	42%	0%
No preference	14%	22%	7%	16%	0%
Somewhat prefer import	4%	6%	0%	0%	25%
Strongly prefer import	2%	0%	0%	5%	0%
Total	100%	100%	100%	100%	100%

In this set of questions, major seafood farming countries were used as production locations. When presented with specific country of origin options, 95 percent of the respondents selected farm-raised in the USA (Table 5). However, in Table 16, when individual local production areas within the United States were identified, 32 percent felt that imported product was higher quality. The brand of preference seems to be “USA”.

Table 5: Perceptions about Country of Origin that Convey the Highest Quality

Fish/Shellfish Country of Origin	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
Farm-Raised in Chile	5%	0	7%	5%	25%
Farm-Raised in China	0	0	0	0	0
Farm-Raised in the USA	95%	100%	93%	95%	75%
Total	100%	100%	100%	100%	100%

4.3B. Eco-Friendly Labeling

Table 6: Effect of Eco-Friendly Labeling on Purchasing Decision(s)

Effect	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
More likely to purchase	71%	83%	73%	53%	100%
Less likely to purchase	4%	0	7%	5%	0
No effect	25%	17%	20%	42%	0
Total	100%	100%	100%	100%	100%

Seventy-one percent of those surveyed indicated that they would be more likely to purchase product that carried an eco-friendly label (Table 6). Many were familiar with the issue of dolphin safe tuna and made a concerted effort to change their purchase patterns when the concern was prominent in the media. As media attention for the issue diminished, those labels are no longer prominent. Twenty-five percent said that eco-labeling would have no effect on purchase decision (Table 6).

Table 7: Consumer Perceptions about Ecologically Sound Seafood Production Methods that Convey the Highest Quality

Term	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
Harvested from a Sustainable resource	21%	18%	20%	25%	25%
Farm-raised in an ecologically-sound manner	41%	29%	47%	50%	25%
Harvested in an ecologically-sound manner	38%	53%	33%	25%	50%
Total	100%	100%	100%	100%	100%

The term ecologically sound had more resonance with the participants than sustainability probably because of the lack of familiarity with the concept of sustainable resources. Since both “farm-raised in an ecologically-sound manner” (41 percent) and “harvested in an ecologically-sound manner” (38 percent) were weighted about equally, there seems to be little distinction between farmed and wild harvest in this context (Table 7).

4.4. Organic Labeling

Consumers expressed a clear interest in the purchase of organic seafood. When asked about organic labeling, consumers preferred the term “organically grown” (Table 8). This may reflect the current labeling for fruits and vegetables. Although it might be thought that farmed or farming has a resonance with the consumer, for aquatic products, this did not seem to hold true. “Organically aquacultured” (34 percent) was favored over “organically farmed” (12 percent). This is reflective of the results in Table 2. where consumers preferred the term aquacultured (56%) over farm-raised (26%).

Table 8: Organically Grown Terminology that Conveys the Highest Quality

Types of Organically Grown	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
Organically Farmed	12%	12%	13%	15%	0
Organically Aquacultured	34%	35%	27%	30%	75%
Organically Grown	54%	53%	60%	55%	25%
Total	100%	100%	100%	100%	100%

4.5. Consumer Perceptions of Organic Foods

Table 9: Statement that Best Describes Consumer Attitude towards Organic Foods

Statement	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
I am committed to buying organic products as often as I can. I am prepared to actively seek out sources.	32%	35%	20%	39%	25%
I believe that organic products are better/good for you, and will purchase them from time to time.	46%	35%	67%	33%	75%
I'm not convinced about the value of organic products in terms of health and taste benefits.	22%	30%	13%	28%	0
Total	100%	100%	100%	100%	100%

In 2001, Seafish conducted a similar study of housewives in the United Kingdom. In that study, 52 percent of the consumers were non-converts to the organic concept and agreed with the third statement (I'm not convinced about the value of organic products in terms of health and taste benefits.). In the current study, only 22 percent of the respondents were unconvinced (Table 9). Only 5 percent of the U.K. consumers agreed with Statement 1, while 32 percent of the consumers in the current study agree. This increase in willingness to purchase organic products may reflect differences in the two markets, United Kingdom versus United States, or may be attributable to the increasing availability and acceptance of organic products at mainstream markets. In any case, it meshes with broader studies that have shown a clear increase in purchase of organic products.

4.6. Consumer Perceptions of Organically – Grown Seafood

Table 10: Statement that Best Describes Attitude towards Organic Seafood

Statement	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
I am committed to buying organic fish/shellfish as often as I can. I am prepared to actively seek out sources.	20%	18%	13%	28%	25%
I believe that organic fish/seafood are better/good for you, and will purchase them from time to time.	52%	47%	60%	44%	75%
I'm not convinced about the value of organic fish/shellfish in terms of health and taste benefits.	28%	35%	27%	28%	0
Total	100%	100%	100%	100%	100%

Commitment to purchasing organically grown seafood was not as high (20% Table 10) as commitment to purchasing organic products (32% -Table 9). This may be a factor of the greater availability of organic produce and dairy products. The consumer has seen those products over a period of years and familiarity/acceptance has grown as a result of advertising and educational efforts. Although several of the stores that hosted the focus groups had imported seafood product that was labeled organic, the overwhelming majority of shoppers had not noticed the label. However, 52 percent felt those organic fish/seafood are better and would purchase the product from time (Table 10). This demonstrates a willingness on the part of the consumer to begin purchasing organic seafood products.

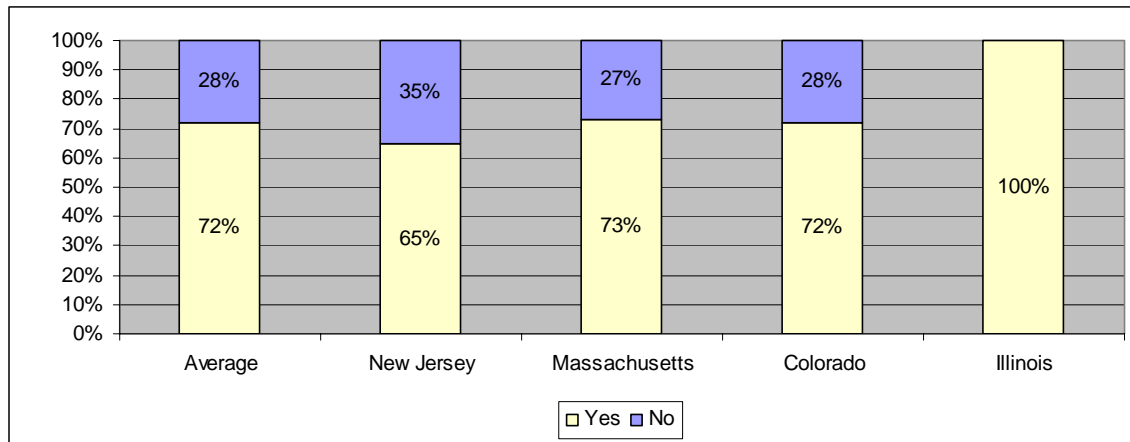
Consumers in the focus groups were reluctant to fully commit to purchasing organic seafoods. Fifty-two percent of the participants felt that they would purchase those products from time to time while 28 percent were not convinced of the value of the products (Table 10). Chicago consumers were most convinced of the value of such

products, but many of those consumers were also interested in purchasing from stores that carry a wide range of frozen seafood products at a moderate price. Pricing strategies will be important in building market share.

Many consumers in the focus groups had heard negative stories about aquacultured seafood and felt that, specifically in this category, it was important to have some third party guarantees on the safety of the product. Several individuals reiterated the importance of the store reputation in ensuring the safety of the product. Most had specific stores in which they purchased seafood because they felt the quality and safety of the product was better.

Consumers in New Jersey and Massachusetts were least convinced about the benefits of organic production. This might be attributed to the idea that they had grown up with wild caught seafood.

Figure 6: If Available, Would Consumers Purchase Organic Seafood?



Consumers were asked why they would purchase organic seafood.

Although there was consumer interest in purchasing organically grown seafoods, no attempt was made to quantify the frequency of purchase or to determine which species would profit most from organic labeling. This level of interest may be directly related to

concerns about the safety of the product. Media coverage of negative stories about farmed seafood may increase demand for products that are labeled organic but this demand may be short-lived. Twenty-eight percent of the shoppers were not interested in an organic product and most did not see any value in purchasing it (Figure 6).

Table 11: Reasons for Wanting to Purchase Organic Seafood

Reason	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
Chemical/Pesticide Free	95%	100%	90%	92%	100%
More nutritious	54%	46%	82%	39%	50%
Superior flavor	62%	64%	55%	62%	75%
Animal welfare	36%	55%	27%	39%	0
Ecologically sound	59%	55%	64%	62%	50%
Credible standards	49%	55%	46%	46%	50%
Better quality	59%	55%	46%	69%	75%
Free of antibiotics	87%	91%	73%	100%	75%
Safer	64%	64%	73%	54%	75%

Ninety-five percent of the consumers in the focus groups felt that a major advantage of organic fish/shellfish was that it was chemical/pesticide free (Table 11). This points out the concerns that consumers have about contaminants in seafood. Recreational fish advisories and news about contaminants in seafood products are often picked up as sound bites by the nightly news. Those sound bites, rather than the complete story influence consumer beliefs and attitudes.

Eighty-seven percent were concerned about antibiotics and felt that this was an important reason to purchase organic products. Since so few drugs are used by the aquaculture community, this should be selling point for all farm-raised seafood products. Overall, there was an attitude that organic products were safer. Sixty-four percent of those questioned indicated that they felt organic fish and shellfish would be safer. The groups also thought that it would have a superior flavor (62 percent), and be of better quality (59 percent). Better quality and ecological soundness were tied (59 percent). It is difficult to interpret what is meant by better quality and how quality differs from flavor

and the other components of wholesomeness. Quality may involve an appearance component (Table 11).

Superior flavor was also viewed to be a major attribute of organic seafood, however, this is in juxtaposition to the identification of wild harvest as having superior flavor to aquacultured products.

Table 12: Reasons for Not Wanting to Purchase Organic Seafood

Reason	Percentage				
	Average	New Jersey	Massachusetts	Colorado	Illinois
Too expensive	67%	83%	50%	60%	-
Limited availability	13%	0	25%	20%	-
No credible standards	53%	17%	75%	80%	-
Not worth the price difference	40%	0	25%	100%	-
Additives/Chemicals/Residues not a concern	13%	17%	0	20%	-

Price was a major purchase barrier but, surprisingly, lack of credible standards was also a major consideration. Many consumers wanted to see a government seal. This traces back to the concerns raised about quality seals. Many consumers wanted some authority figure to do their due diligence. Currently, in many instances, because of the lack of quality/inspection seals, the store reputation becomes that authority.

4.7. Most Commonly Consumed Seafood Products

Participants were asked to list the five seafoods that they most commonly consume. Since this was strictly a recall question, it is not reflective of actual consumption. Salmon was listed by 16 percent of the respondents and shrimp was listed by 14 percent. Some of the New Jersey participants indicated that they tend to eat shrimp most often in restaurants rather than preparing it at home because they perceive that shrimp is difficult to prepare. Tuna was listed by 9 percent. Cod was listed by 6 percent. Crab was also listed by 6 percent. It is not clear whether this was a true crab or a surimi

based product (Table 13). Tilapia, although it was not in the top five species, was listed by 4 percent of those surveyed.

Table 13: Most Commonly Consumed Seafoods

National Rank (NFI)	Top 5 Most Commonly Consumed Seafood Listed by Focus Group Participants				
	Average	New Jersey	Massachusetts	Colorado	Illinois
1. Shrimp	Salmon (16%)	Shrimp (17%)	Scallops (14%)	Salmon (20%)	Salmon (22%)
2. Canned tuna	Shrimp (14%)	Salmon (16%)	Shrimp (12%)	Shrimp (13%)	Shrimp (17%)
3. Salmon	Tuna (9%)	Scallops (8%)	Lobster (11%)	Tuna (11%)	Tuna (17%)
4. Pollock	Cod (6%)	Tuna (7%)	Haddock (8%)	Trout (9%)	Cod (11%)
5. Catfish	Crab (6%)	Tilapia (7%)	Salmon (8%)	Halibut (8%)	Haddock (1%)

In all markets, shrimp and salmon were best sellers. Species selection had a regional nature. No consumers in the coastal markets, Massachusetts and New Jersey, mentioned catfish among their list of top five species. Catfish was mentioned by 3 percent of the Colorado respondents. Many of the species, such as scallops (14 percent), lobster (11 percent), haddock (8 percent), and clams (8 percent) mentioned in the Massachusetts groups were traditional New England harvests. In Colorado Springs, since many consumers were transplants, they were looking for species that they consumed back home. Trout (9 percent) ranked highly among this group.

4.8. Pricing

Most consumers had a good idea of seafood prices, however, the focus groups were composed of people who regularly purchase seafood. Many quoted prices for very expensive species. Clearly, they had at least looked at those products and the prices made an impression. New Jersey consumers listed Chilean sea bass at \$18.99 a pound.

In almost all of the focus groups, consumers felt that the price of seafood was too high. However, in some instances, that did not affect purchase. In at least one upscale store, the frequent response was “I want what I want and am willing to pay for it”. This

group was comprised primarily of dual-income, no kids at home families. A number of people in that group indicated that their households were small, generally two person, and since they didn't need to buy much, cost wasn't that much of an issue. One woman with several children said that she sometimes purchases farm-raised fish since the price is more affordable. In an upscale store group, most participants felt that the price of seafood was about three times the price of meat. There was consensus that organic meat was priced 30-40 percent higher and organic poultry was priced 20-25 percent higher than non-organic products in the same category. For those consumers interested in organic seafood products, most indicated that they were willing to pay between \$3 and \$5 more per pound for organic seafood.

4.9. Seafood Inspection

When asked about seafood inspection, consumers had varying opinions. Many felt that there was no inspection. Several mentioned size regulations and were familiar with conservation issues in the recreational harvest but were unsure of commercial harvest. Most felt that meat and poultry inspection was more strenuous. When asked about the inspecting agency, the most common consumer response was USDA as a result of their knowledge of meat and poultry inspection. Several mentioned that there was no "seal" on the products.

Several felt that if government provides the standards, there is less of an onus on the consumer. Government certification was an important consideration in the purchase decision and labeling coupled with an education program might help to increase sales.

Many people indicated that they trust the store to inspect the product and offer wholesome, good quality seafoods. This reinforces the idea of the store reputation being a driving factor in seafood purchase.

4.10. Trying New Species

In most of the focus groups, consumers felt that they would try a new product if it were on sale. Others were interested in product samples. Many said that they try new

seafoods and new preparations in restaurants and then try to recreate the dish at home. Almost all indicated that they would not purchase a new species unless they tasted it first. Several indicated that store associates had been instrumental in getting them to try something new.

4.11. Seafood and Health

Quality and safety of the product were often viewed as a function of where the fish was caught. Alaska and Hawaii were deemed safe harvest areas. It is interesting to note, that in the questionnaire portion, many consumers were swayed by the simple use of an adjective. A number of consumers selected the *pristine* waters of the Gulf of Mexico as the point of origin label that they most likely select (Table 14). Consumers were also swayed by what they perceived as vacation or “romantic” locations such as Cape Cod. The concept of water quality seems to be directly tied to a region’s image.

Table 14: Package Label that Consumers’ Would Most likely Select in the Supermarket

Label		Percentage				
		Average	New Jersey	Massachusetts	Colorado	Illinois
Farm-Raised in:	Jersey Shore	18%	17%	-	-	-
	Virginia Shore		-	0	-	-
	Colorado		-	-	37%	-
	Great Lakes Region		-	-	-	0
Farm-Raised on Cape Cod		61%	55%	80%	47%	75%
Farm-Raised in Chile		9%	0	7%	16%	25%
Farm-Raised in the Pristine Waters of the Gulf of Mexico		12%	28%	13%	0	0
Total		100%	100%	100%	100%	100%

Seventy-five percent of the participants indicated that they be much more likely to purchase particular seafood products if they were informed about regions that are known for high quality and availability. This reinforces the need for greater consumer education.

Table 15: Consumers Likelihood of Purchase if They Were Informed About Regions that are Known for High Quality and Availability

Likelihood	Percentage				
	National Average	New Jersey	Massachusetts	Colorado	Illinois
Much more likely	75%	89%	67%	63%	100%
Somewhat more likely	21%	0%	33%	37%	0%
No difference	4%	11%	0%	0%	0%
Total	100%	100%	100%	100%	100%

Food safety information was confused at best. In one group, people said that they refuse to eat seafood products from species that dwell on the ocean floor because they eat and concentrate toxics in their flesh. Contaminants were a major concern. Most people were familiar with the advisory about mercury and pregnant women, but could not identify the species that should be avoided. Several individuals felt that farmed salmon should be avoided by pregnant women because of “mercury concerns”. Concerns about PCBs in farmed salmon were also raised. The farmed salmon information that was reported by the press in the winter of 2004 had an effect on people’s perception of the product and that perception remains a concern.

“No bottom feeders or large fish”

“Seafood is unhealthy unless it is fresh, clean and raw.”

One individual in an upscale store indicated that she asked the sales associate about mackerel and was told that the store did not carry mackerel because it was a bottom feeder.

Almost all participants were familiar with the term omega-three fatty acids and had some level of awareness that omega 3 fatty acids were good for coronary health but did not have any information about other possible benefits. Although the new USDA

Food Pyramid was announced on the day of the Colorado Springs focus groups, there was no mention of it.

Almost all of the participants agreed that in order to maintain good health, you should eat seafood at the very least twice a week. Many thought three times would be the ideal. However, when this was compared to average monthly expenditures for seafood, it did not seem that they were actually following this advice.

4.12. Seafood and Food Information

Many consumers receive health and food information from television often as part of local or national news broadcasts. It was obvious that often this was a sound bite and many of the participants did not get a clear, complete message. A number of people said that they regularly look for health information on the web. Many were devoted “foodies” and watched the “Food Network” on a daily basis. Local cooking shows were also mentioned.

4.13. Food Miles

Table 16: Perceptions about Seafood Origin that Convey the Highest Quality

Fish/Shellfish Origin		Percentage				
		Average	New Jersey	Massachusetts	Colorado	Illinois
Imported		32%	28%	0	60%	25%
Locally Grown In:	New Jersey	47%	17%	-	-	-
	Cape Cod		-	100%	-	-
	Colorado		-	-	35%	-
	Great Lakes		-	-	-	50%
Grown in	Cape Cod	21%	55%	-	-	-
	Virginia		-	0	-	-
	California		-	-	5%	-
	California		-	-	-	25%
Total		100%	100%	100%	100%	100%

The importance of local production, often referred to as “food miles”, has been touted by the food press and is considered an important factor in food selection among

health conscious consumers. This was of special concern to the Colorado participants. To test how this concept relates to seafood purchase, focus group participants were asked to select the term that conveyed the highest quality. On average, locally grown was selected by 47 percent of the participants. New Jersey, although it is a coastal state and many residents regularly visit the Jersey Shore, did not score well with the participants. Only 17 percent of the New Jersey respondents selected locally grown as an indicator of quality. Twenty-eight percent of New Jersey participants selected imported as being of higher quality. The locally grown connotation seems to vary in potency from location to location (Table 16).

Both Colorado groups had a higher acceptance of imported products than the other groups. Overall 32 percent of those in the focus groups felt that imported product was higher quality than local production. This represents a disconnect between opinions that were voiced in the focus group about the relationship of quality to the distance that product had to travel to reach the market. Massachusetts participants, probably because of their close association with the sea and the high quality reputation of the region as a seafood harvesting area, preferred local production unanimously.

Other studies (Gross, 2001) have shown that the geographic descriptors (the Scottish Coast) that romanticize the production location can sway consumers. New Jersey consumers chose Cape Cod (55 percent) over locally grown on the Jersey Shore (17 percent). A similar study conducted for the Southeastern Massachusetts Aquaculture Center (Barnes, 2003), sampled consumers in New York, New Jersey, Massachusetts, Connecticut, New Hampshire and Vermont and found that 26 percent would definitely pay more for farm-raised clams branded from Cape Cod, 51 percent probably would, 16 percent probably would not and 6 percent definitely would not.

5. Conclusions

Effective marketing strategies can be developed to better position organically-grown seafood products in the marketplace when marketers have an understanding of:

- 1) Which attributes of organically-grown seafood products are important to consumers;
- 2) The mechanisms or factors that consumers use to decide to purchase seafood;
- 3) What products they currently purchase;
- 4) Where they purchase seafood; and
- 5) The intrinsic dollar value that they place on organically grown seafood.

Qualitative information gathered during the focus group portion of the project provided a clearer understanding of how consumers make their purchase decision, their general knowledge and understanding of seafood, farm-raised seafoods and organically-grown seafoods. It also provided a qualitative understanding of the inherent values that they place on farm-raised and organically-grown seafoods

Because clear distinctions emerged between upscale, health conscious consumers and the more generic consumer, especially in terms of willingness to pay, organic products will require a very specific market placement. In general, price is a limiting factor in frequency of seafood purchase and this will extend to the purchase of organically-grown products. Product safety rather than environmental considerations is the major driving force behind organic purchase. A higher value is placed on products that are more “natural” and have less “human intervention”.

There are five important 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. 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. 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/ica/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 Youssefi, Minou, "The World of Organic Agriculture - Statistics and Emerging Trends – 2004", International Federation of Organic Agriculture Movements, 2004. ISBN 3-934055-33-8.

7. 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. Paquette, "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 Goldberg, 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. 3/4 (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.

8. Focus Group Questionnaire

FOCUS GROUP QUESTIONNAIRE

Labeling

1. At each letter, please check the ONE term that conveys the image of the highest quality fish and shellfish to you:

A) Organically Grown Harvested from the Wild All Natural

B) Imported Locally Grown in: New Jersey/Cape Cod/ Colorado/Great Lakes
 Grown on: Cape Cod/ Virginia/ California

C) Aquacultured Cultured Farm-Raised

D) Raised in the Wild Raised in Pristine Waters Raised in Controlled Conditions

E) Farm-Raised in Chile Farm Raised in China Farm-Raised in the USA

F) Organically Farmed Organically Aquacultured Organically Grown

G) Harvested from a sustainable resource Farm-raised in an ecologically-sound manner
 Harvested in an ecologically-sound manner

2. Please check the ONE package label that you would be most likely to select in the supermarket case:

- Farm-Raised on the Jersey Shore/ Virginia Shore/ Colorado/Great Lakes Region
- Farm-Raised on Cape Cod Farm-Raised in Chile
- Farm-Raised in the Pristine Waters of the Gulf of Mexico

3. Please check the ONE location where you usually get fish/shellfish for home consumption?

- Natural food store Supermarket Fish Store
- Dock Recreational Fishing Wholesale Club
- Other (please explain) _____

4. Please list the five types of fish/shellfish that you eat most often.

Attitudes Toward Organic Products

1. Please check the ONE following statement that best describes your attitude and purchase behavior with respect to **organic foods**?

- I am committed to buying organic products as often as I can. I am prepared to actively seek out sources of organic produce and to pay extra for it.
- I believe that organic products are better/good for you, and will purchase them from time to time, particularly for special occasions.
- I'm not convinced about the value of organic products in terms of health and taste benefits, and don't feel that they are worth the extra cost

2. Please check the ONE following statement that best describes your attitude and purchase behavior with respect to **organic fish and shellfish**?

- I am committed to buying organic fish/shellfish as often as I can. I am prepared to actively seek out sources of organic fish and to pay extra for it.
- I believe that organic fish/shellfish are better/good for you, and will purchase them from time to time, particularly for special occasions.
- I'm not convinced about the value of organic fish/shellfish in terms of health and taste benefits, and don't feel that they are worth the extra cost.

3. If you could purchase it, would you select organic fish/shellfish (check ONE)?

- YES NO

If YES, Why (check ALL that apply)?

- Chemical/Pesticide Free More Nutritious Superior Flavor
 Animal Welfare Ecologically Sound Credible Standards
 Better quality Free of Antibiotics Safer

If NO, Why not (check ALL that apply)?

- Price Premium Too Expensive Limited Availability No Credible Standards
 Not Worth the Price Difference Additives/Chemicals/Residues not a Concern

4. If the typical prices for non-organic products are:

Catfish \$2.99/lb. Salmon Fillets \$4.99/lb. Shrimp \$9.99/lb. Clams \$3.99/dz.

How much are you willing to pay for organic products: (write in price)

Catfish ____/lb. Salmon Fillets ____/lb. Shrimp ____/lb. Clams ____/dz.

5. At what price level (if any) would you stop consuming organic seafood?

Catfish ____/lb. Salmon Fillets ____/lb. Shrimp ____/lb. Clams ____/dz.

Attitudes Toward Farm-Raised Fish and Shellfish

1. How often do you purchase fish or shellfish (check ONE)?

- Never
 - Less than Once a Month
 - Once a Month
 - Twice a Month
 - Once a Week
 - Twice a Week or More
-

2. Do you prefer fish/shellfish that is caught in the wild, or farm-raised (check ONE)?

- Strongly prefer wild
 - Somewhat prefer wild
 - Strongly prefer farm-raised
 - Somewhat prefer farm-raised
 - No preference
-

3. Do you prefer fish/shellfish that is obtained from sustainable resources (check ONE)?

- Strongly prefer
 - Somewhat prefer
 - Strongly prefer
 - Somewhat prefer
 - No preference
-

4. Do you prefer fish/shellfish that is raised in the USA or imported from another country (check ONE)?

- Strongly prefer domestic
 - Somewhat prefer domestic
 - No preference
 - Somewhat prefer import
 - Strongly prefer import
-

5. Would you be more or less likely to buy seafood if you were informed about which regions were known for high quality seafood and the availability (check ONE)?

- Much more likely
 - Somewhat more likely
 - Much less likely
 - Somewhat less likely
 - No difference
-

6. What effect (if any) would organic labeling have on your purchasing decision(s) (check ONE)?

- More likely to purchase
 - Less likely
 - No effect
-

7. What effect (if any) would eco-friendly label have on your purchasing decision(s) (check ONE)?

- More likely to purchase
- Less likely
- No effect

8. About how frequently do you eat fish or shellfish in a restaurant (check ONE)?

- Never
- Less than Once a Month
- Once a Month
- Twice a Month
- Once a Week
- Twice a Week or More

Demographic Information

(check ONE for each question)

1. Please indicate your age:

- 18-24 25-34 35-44 45-49 50-54 55-64 65 or over

2. Please check the box which best describes your total household income:

- under \$30,000 \$30,000-\$40,000 \$50,000-\$75,000
 \$40,000-\$50,000 \$75,000-\$99,999 over \$100,000 prefer not to answer

3. Gender: MALE FEMALE

4. Are you the principle grocery shopper for your household? YES NO

5. About how much do you spend on fish/shellfish that you consume at home each month?

- More than \$150 Between \$100-\$150 Between \$50-\$100
 Between \$25-50 Less than \$10-25 Less than \$10

6. How many people reside in your immediate household? _____

7. Are there any children in your household? YES NO

8. How often do your children eat fish or shellfish?

- Never Less than Once a Month Once a Month
 Twice a Month Once a Week Twice a Week

9. At what age did you first introduce seafood to your child? _____

Thank you for your help!!



Rutgers Cooperative Extension
Department of Agricultural, Food and Resource Economics
N.J. Agricultural Experiment Station
Rutgers, The State University of New Jersey, New Brunswick

and

New Jersey Department of Agriculture
Fish & Seafood Program