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Ecolabeling of Seafood from Aquaculture: A Survey of Rhode Island Consumer Preferences

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Introduction

As the global supply aquacultured seafood has increased with rapid advances in production technology and correlated decreases in production costs, the environmental sustainability of aquaculture has become an issue of critical and increasing concern to policy makers, environmental groups and others (FAO, 2009; Smith et al. 2010). Aquaculture production practices often have ecosystem impacts which are frequently unaccounted for in the price paid for the product. A significant amount of research has been conducted on consumers' preferences for seafood, including but not limited to Hicks, Pivarnik and McDermott (2009), Gempesaw et al. (1995), Halbrendt et al. (1991), Holland and Wessells (1998), Wessells, Johnston and Donath (1999), Jaffry et al. (2004), Kumar, Quagrainie and Engle (2008), Johnston and Roheim (2006), Wirth, Love and Palma (2007), Brecard et al. (2009), and Salladare, et al. (2010). Yet none of these studies give significant attention to the effect of farmed seafood production practices disseminated by environmental groups, as well as attention to potential health issues for farmed versus wild seafood products (Hites et al. 2004), on consumers' views of farmed seafood and their seafood purchase patterns.

The objective of this study is to evaluate consumers' views of farmed seafood, and factors which may influence their purchases of farmed seafood. The study is implemented in Rhode Island, a coastal state rich in seafood from coastal and regional fisheries as well as a growing aquaculture industry. Yet, as is the case for the rest of the U.S., a significant amount of seafood consumed in the state comes from outside the region and nation. According to focus groups conducted by the researchers on this project involving consumers from across the state of Rhode Island, salmon and shrimp are two of the most popular products consumed, neither of which are local products. Better understanding of Rhode Island consumers' perceptions of farmed seafood, and seafood purchasing behavior, will assist the Rhode Island seafood industry, the supplychain and policy makers as they continue to promote a sustainable aquaculture industry within the State.

Methodology

The study was implemented, after University of Rhode Island Institutional Review Board approval, with a survey of 250 consumers across the state during August 2010. Respondents were asked to fill out the survey on the site and each respondent was given an incentive of $5 to complete the survey. The survey was conducted at a mix of locations: supermarkets (n=49: Belmont's in Wakefield, Roch's in Narragansett and Warwick, Stop & Shop in Woonsocket), fish markets (n=112; Gardner Wharf Fish Market in Newport, Long Wharf Seafood in Wickford, Matunuck Oyster Bar in South Kingstown) and farmers' markets (n=89; in Johnston, Middletown, and Richmond).

The survey included several sections: a) seafood purchasing patterns, including purchases of farmed seafood; b) beliefs about seafood, particularly farmed versus wild-caught seafood products; c) knowledge of seafood labeling, including ecolabels; d) preferences

for organic foods; and d) demographics. Questions on consumers' preferences on organic food were elicited since it was thought that consumers pre-disposed to purchase organic food would similarly be predisposed to purchase ecolabeled farmed products.

The remainder of the report presents the highlights of the results of the survey, followed by the implications of the results. A copy of the survey is provided in the appendix.

Results

Demographics of Survey Participants

As shown in Table 1, the sample is more educated, less ethnically diversified, and wealthier than the average Rhode Island population[1]. However, targeted respondents were seafood consumers who had just purchased seafood, and the sample was disproportionately drawn from southern Rhode Island, with few respondents from the larger Providence metropolitan area.

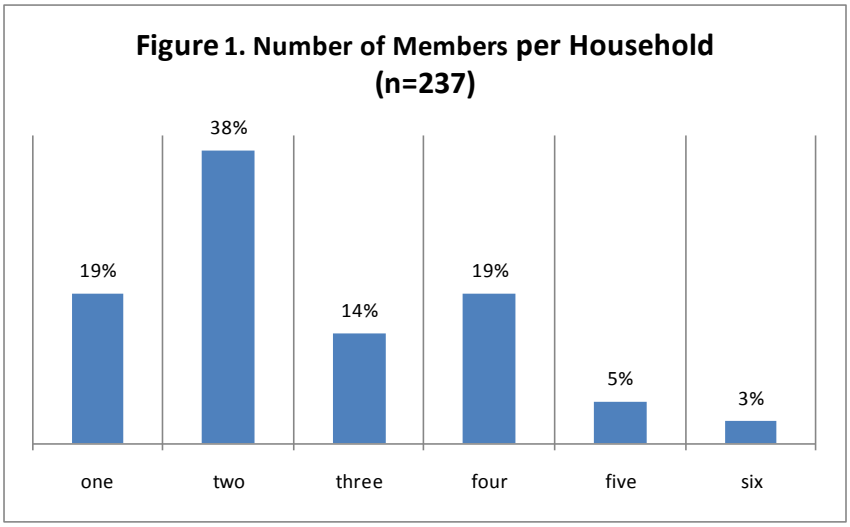
Table 1. Demographics of Survey Respondents (n=250)

Variable	Description	%	Rhode Island Census
Gender (n=246)	Female	57	51.4
Education (n=246)	High School	7.3	78.0
	Technical School	19.1	
	College Graduate	39.0	25.6
	Post Graduate Degree	34.1	
Employment Status (n=246)	Employed	67.1	63.9
	Retired	18.3	
	Full-time Homemaker	6.1	
	Student	4.9	
	Unemployed	3.3	
Ethnicity (n=244)	African-American	0.8	6.4
	Asian	3.7	2.8
	Caucasian	91.8	78.2
	Hispanic/Latino	3.7	12.1
Household Income Range (n=233)	< $40,000	14.2	15.7
	$40,000-79,999	34.3	35.9
	> $80,000	51.5	22.1
Age Ranges (n=245)	18-25	8.2	
	26-35	10.6	
	36-45	17.6	
	46-55	24.1	
	56-65	22.0	
	66 and over	17.6	14.3

[1] www.recordsbase.com/Rhode-Island-Census

Number of Members per Household

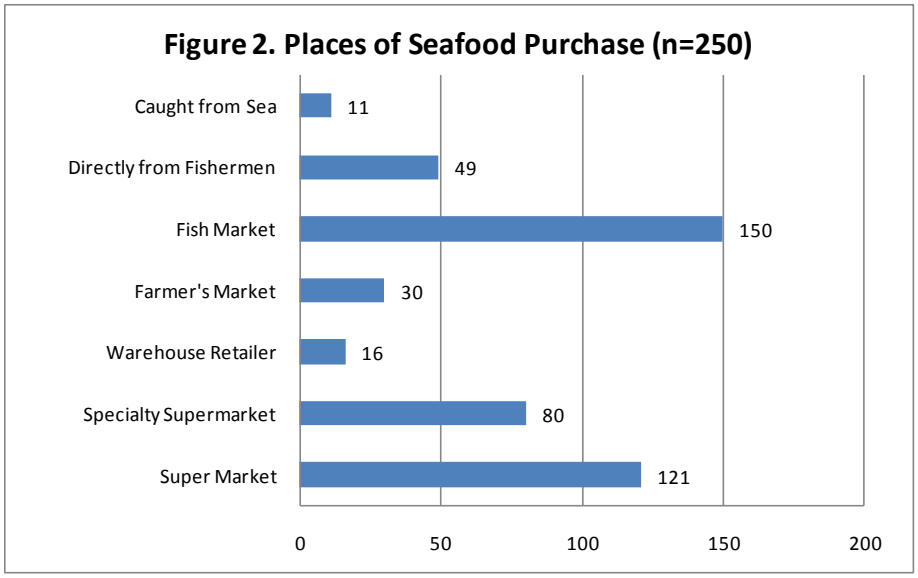
Figure 1 shows that the majority (38%) of households were two-member households. However, the survey did not allow for determination of the relationship between age group in a household and the number of household members, i.e. adult couple, child and a single parent, etc. The average number of members per household in 2000 in Rhode Island was 2.47[2].



[2] www.recordsbase.com/Rhode-Island-Census

Where Seafood is Purchased for Home Consumption

Participants purchase seafood at a variety of locations. When asked to indicate all the types of markets at which they purchase seafood for preparation at home, responses follow Figure 2.



Most participants indicate they purchase their seafood from fish market, followed by supermarket. The results from this question are likely to be correlated with where our respondents were intercepted; we intercepted a large number of respondents outside fish markets. Focus group results indicate similarly that Rhode Island consumers purchase fish in multiple locations, often depending upon species. Trust in the purveyor for attributes of the product is an important determinant of where the consumers shop for their seafood.

Frequency of Seafood Purchase

Since the focus of the project is on farmed seafood, we were most interested in how often consumers purchase farmed seafood products. Therefore, respondents were asked how often they purchased salmon, catfish, tilapia, shrimp, oysters and mussels. Frequency of purchase is shown in the following figures 3 and 4. The finfish are shown in figure 3, which shows the popularity of salmon. The remaining three products are shown in figure 4, again showing the popularity of shrimp.

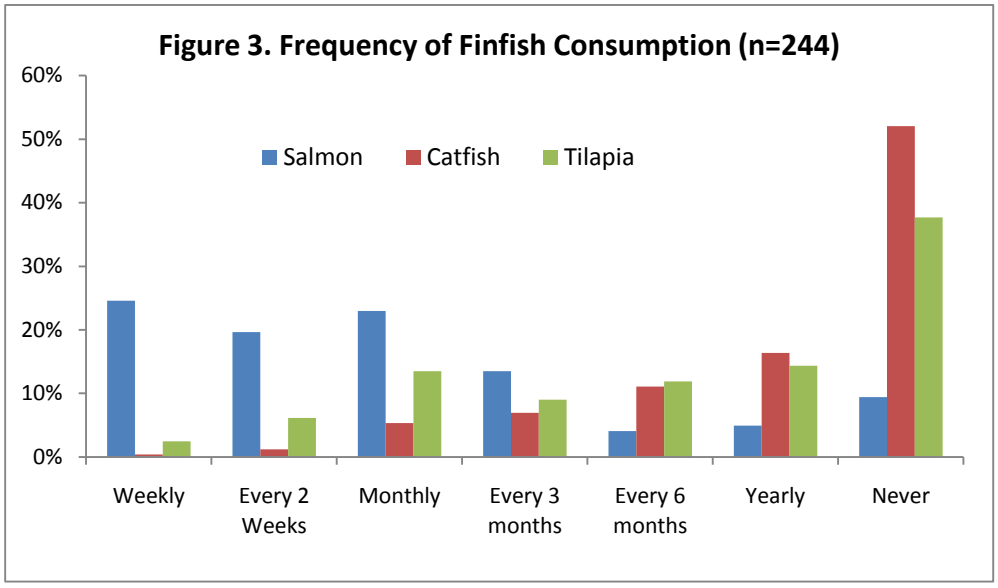


Figure 3. Frequency of Finfish Consumption (n=244)
60%
50%
40%
30%
20%
10%
0%
Salmon
Catfish
Tilapia
Weekly
Every 2 Weeks
Monthly
Every 3 months
Every 6 months
Yearly
Never

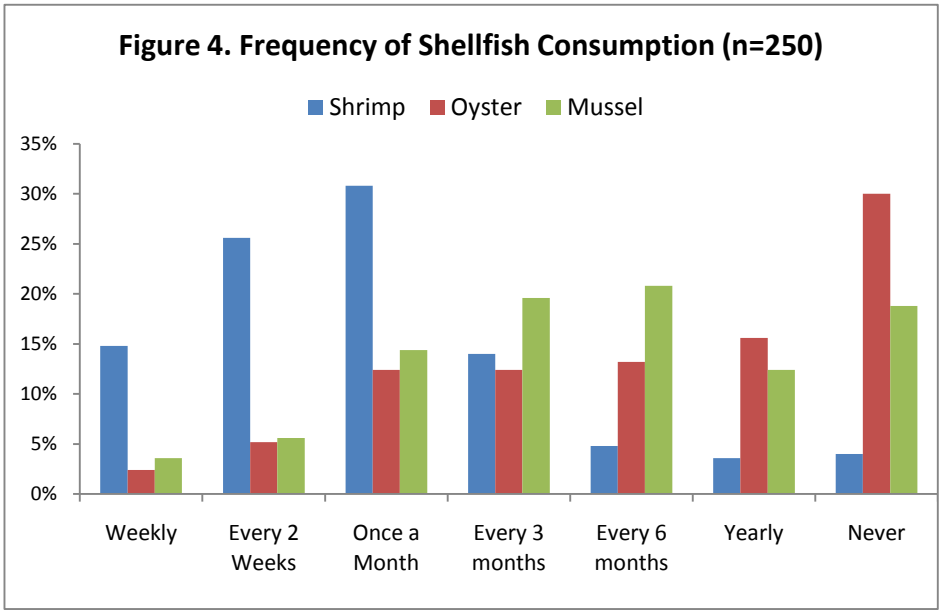


Figure 4. Frequency of Shellfish Consumption (n=250)
Shrimp
Oyster
Mussel
35%
30%
25%
20%
15%
10%
5%
0%
Weekly
Every 2 Weeks
Once a Month
Every 3 months
Every 6 months
Yearly
Never

To facilitate further analysis, frequencies were grouped into larger categories as in table 2 below:

Table 2. Frequency of Seafood Purchase

Frequency of Seafood Purchase	Time Intervals
Frequent	Weekly Every 2 Weeks Once a Month
Moderately Frequent	Every 3 Months Every 6 Months
Infrequent	Yearly Never

Factors influencing consumers' decisions when purchasing seafood

Of interest are the factors that influence consumers' purchasing decisions. Economics tells us that price is an important factor influencing what consumers buy and how much consumers buy. However, focus group results indicated that there are many other factors which influence seafood purchases. Consumers were provided a series of factors, and asked to indicate for each how important each was in their purchase decision (very important, somewhat important, unimportant, or unsure/don't buy). Based upon those results, we generated a ranking of the most to least important factors by taking the percentage responses to 'very important'. Table 3 shows the ordering from the highest to lowest of the 'very important' level of influence.

Table 3. Most important factors in respondents' purchase decisions

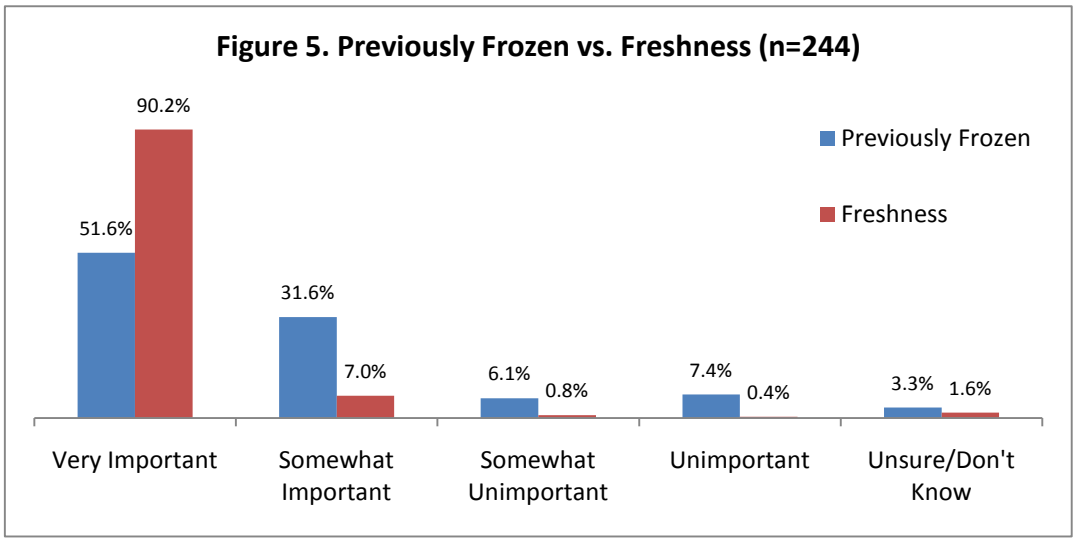
Factor	Percentage to choose "very important" as level of influence
Freshness	90.2%
Species (i.e. proxy for taste)	72.1%
Level of Health Risks from Possible Contaminants	68.0%
Health and Nutrition Reasons	64.3%
Whether it was Previously Frozen	51.6%
Whether the Environment is adversely impacted when caught or farmed	46.7%
Whether it is Farmed or Wild	37.7%
Whether it is Locally Harvested	36.9%
Price	29.5%
Country of Origin	27.5%
Ease of Preparation	17.6%
Availability of Recipes	7.4%

Using information from the full range of responses to the question above, we investigate the similarity in answers to pairs of factors. For example, do respondents answer in a similar fashion the how important 'freshness' is to them, as they do how important 'whether it is previously frozen'? This is explored in further detail below for a range of questions.

Previously Frozen vs. Freshness

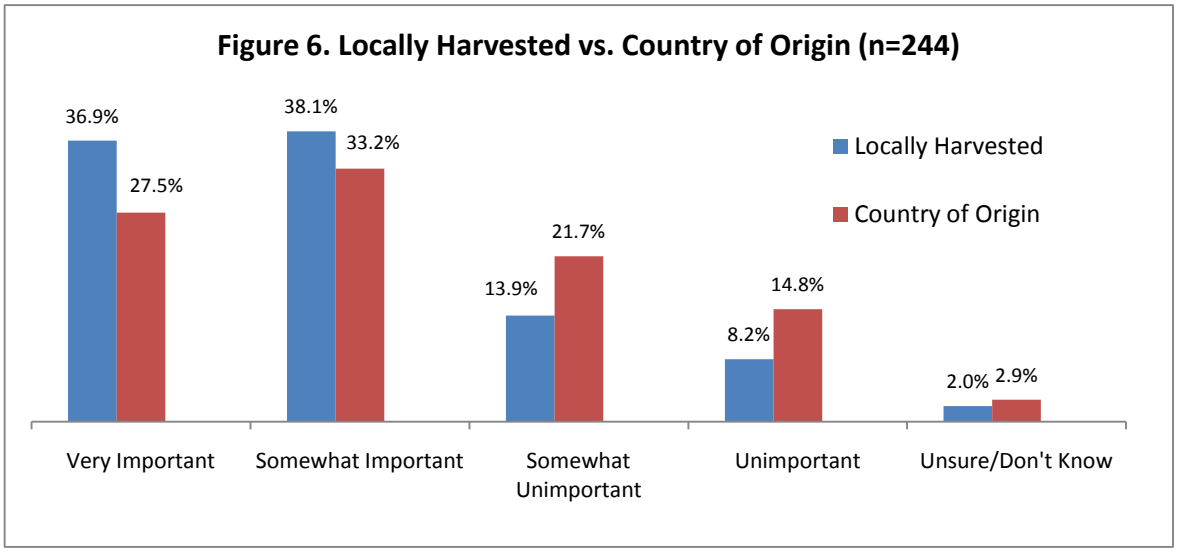
Freshness of seafood is one of the most important decision factors for consumers to purchase seafood, as shown in Table 3 above. Figure 5 below compares responses to how important freshness is relative to whether it has been previously frozen. The difference between the two may relate to where the product is purchased; in other words, products purchased directly from the fisherman are viewed as truly 'fresh.' Alternatively, 'fresh' can also indicate quality, and astute seafood consumers recognize that current

freezing technology may provide very high quality fish for those which are not available from local sources (e.g. salmon or shrimp).



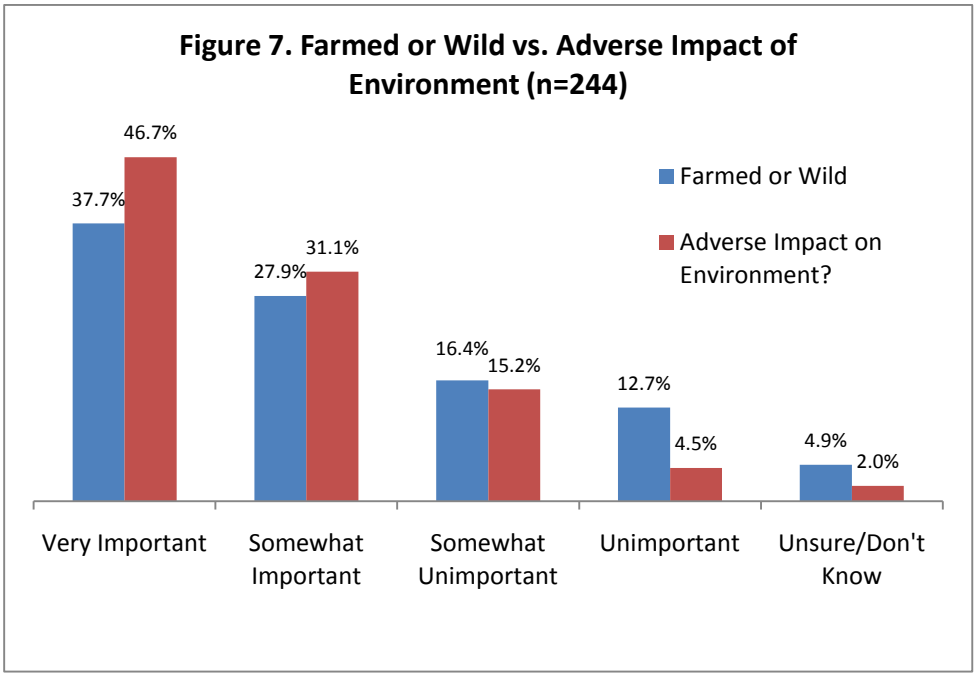
Locally Harvested vs. Country of Origin

Given the increasing interest in marketing 'local,' both in agriculture and in seafood, it is worth exploring the importance of source of the seafood to consumers. Figure 6 shows a positive correlation between local and country of origin. Focus group results bear out that Rhode Island consumers have strong preferences for locally harvested seafood, when possible, and when not possible, for knowing where that seafood is from.



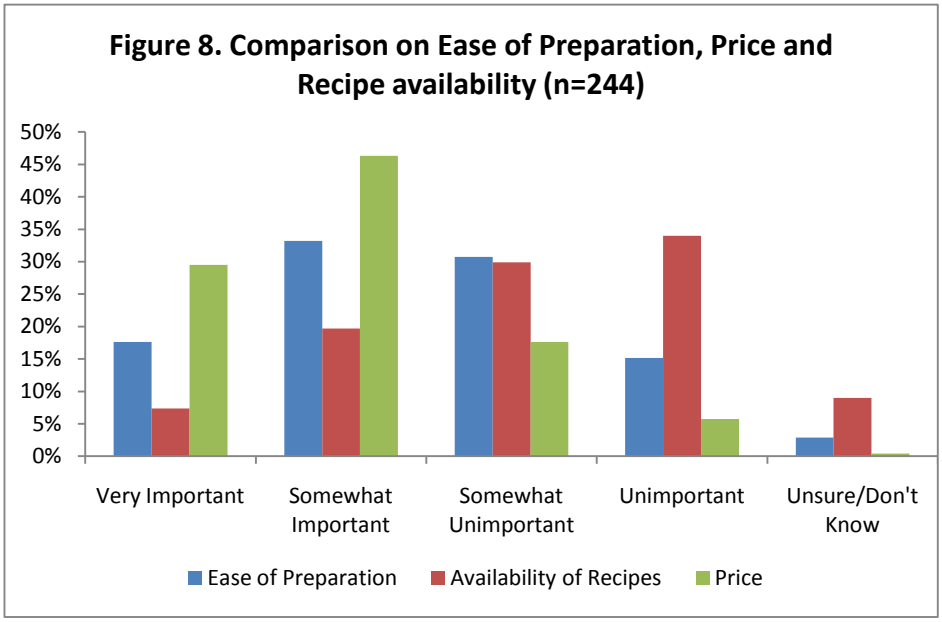
Farmed or Wild vs. whether the Environment is adversely impacted when caught wild or farmed

Figure 7 below compares the responses that knowing whether seafood is farmed or wild is important and whether its production has an adverse impact on the environment important in the seafood purchase decision. According to Figure 7 these responses are correlated in terms of their importance to their seafood purchasing decisions.



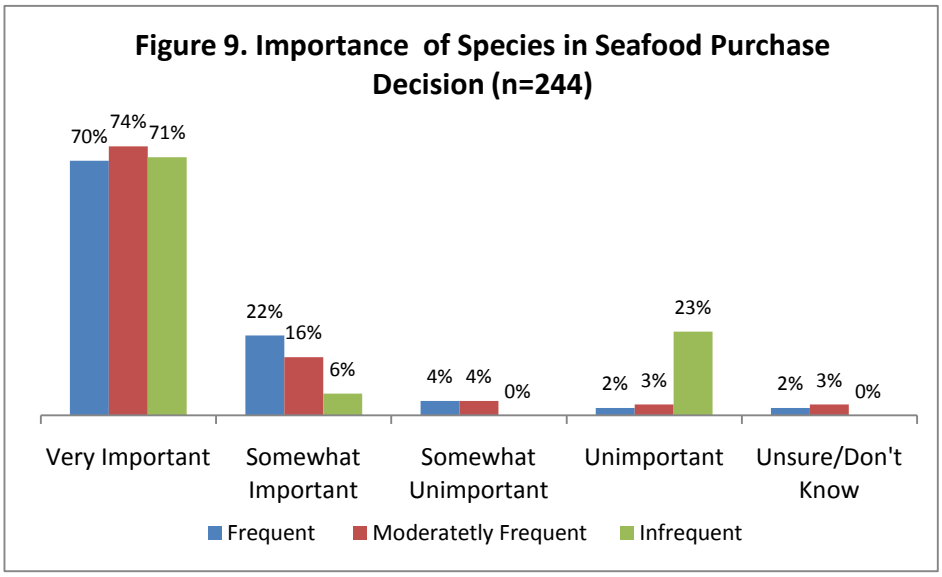
Ease of Preparation, Price and the Availability of Recipes

Figure 8 compares the level of importance of three factors to respondents' seafood purchase decisions: Ease of preparation, price and availability of recipes. It is interesting to note that price is not one of the most important factors. Ease of preparation is important, yet availability of recipes is not important. Focus group results indicate a growing interest in television shows on the Food Network, and opportunities to learn more about simple, easy ways to prepare fish.



Species of Seafood

Respondents were categorized according to their frequency of consumption (see table 2). Taste appears to be very important to our respondents as shown in figure 9 below, which is not unexpected.



Respondents' Preferences for Farmed vs. Wild

Given the objective of the project, respondents were asked to indicate their preferences for farmed versus wild production methods for the six species for which we elected to focus on (salmon, tilapia, catfish, shrimp, oysters, and mussels). It is important to note, these data indicate preferences, and are not a reflection of which type of product respondents actually buy. It might be interpreted as, if given a choice, holding all else equal, which would consumers prefer, as opposed to 'which do you buy.' Results are shown in table 4. This sample of Rhode Island consumers largely prefers wild salmon and shrimp, with 60% and 40%, respectively, indicating wild. Few Rhode Island consumers buy either catfish or tilapia, but indicate they would prefer wild, which is unlikely. There is an even split in oysters preferences, with wild preferences higher than farmed for mussels.

Table 4. Preferences for Harvest Method: Wild or Farmed

Preference	Wild	Farmed	No Preference	Don't Know	Don't Buy
Salmon (n=224)	**60% (135)**	**8% (18)**	**26% (58)**	**4% (9)**	**2% (4)**
Shrimp (n=234)	**40% (93)**	**8% (19)**	**43% (101)**	**7% (17)**	**2% (4)**
Catfish (n=167)	**16% (26)**	**14% (24)**	**27% (45)**	**7% (11)**	**36% (61)**
Tilapia (n=179)	**21% (37)**	**9% (16)**	**34% (60)**	**13% (23)**	**24% (43)**
Oysters (n=185)	**18% (33)**	**18% (33)**	**36% (68)**	**6% (11)**	**22% (40)**
Mussels (n=205)	**29% (59)**	**13% (27)**	**35% (72)**	**9% (18)**	**14% (29)**

Beliefs about Farmed Seafood

Table 5 presents results on how respondents perceive farmed seafood, in some cases relative to wild in terms of quality, taste, or its production practices. To determine if those who prefer wild salmon (based upon table 4) differ from the total sample, the data in red represents the respondents who prefer wild salmon. Similarly, the data in purple represents that subsample of respondents who prefer wild oysters (based upon table 4). They are compared to the data in black from responses from overall respondents.

The strong preferences for wild fish and shellfish are apparent in Table 5 as well, as the majority of respondents indicate that they disagree that farmed fish is fresher than fish from the wild (30% plus 13%). Clearly, local harvest is also an important factor, as fully 74% of respondents indicated they agree they would prefer wild local fish rather than farmed fish from other states. However, the previously frozen attribute of seafood also becomes important, and is trade-off with the importance of farmed, when almost half of respondents indicate they agree that fresh farmed fish tastes better than previously frozen wild fish.

Yet, many of the respondents confess to not knowing much about fish farming production methods. Between 24% and 42% responded that they 'did not know/not sure' to the several questions regarding whether fish farmers can control water quality, farmed fish are treated with antibiotics, fish farming is regulated by the government for farming practices, or fish farming has negative environmental impacts. Views on these questions differed somewhat between the overall respondent pool and those who specifically prefer wild salmon or wild oysters, with those who prefer wild salmon stating stronger agreement, and less uncertainty.

Table 5. Beliefs about farmed seafood

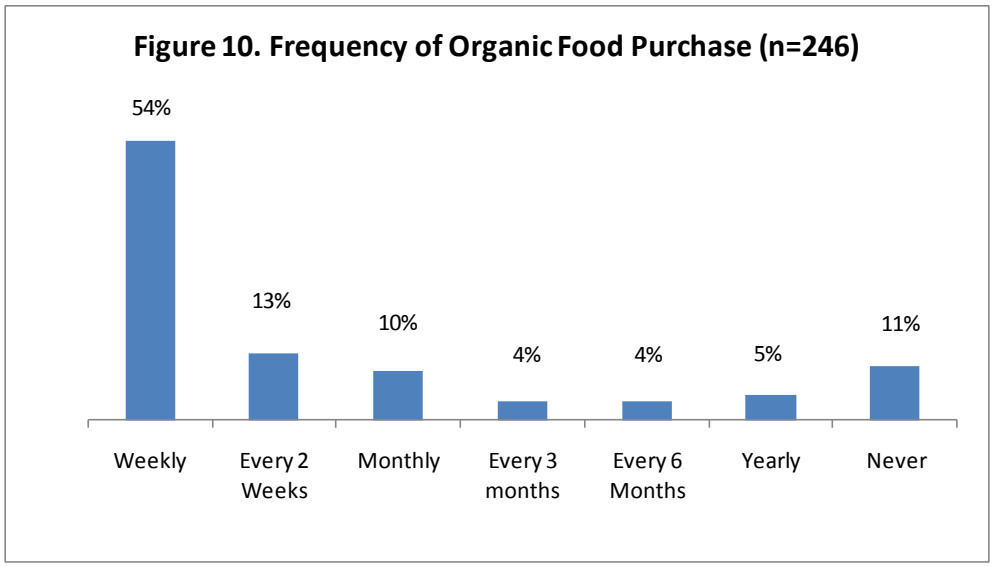
Beliefs	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know/Not Sure
Farmed shellfish tastes equally good as wild shellfish (n=243, n=33)	11% (27) 6% (2)	27% (65) 24% (8)	23% (56) 18% (6)	16% (39) 24% (8)	9% (22) 16% (5)	14% (34) 12% (4)
Fresh farmed fish tastes better than previously frozen wild fish (n=245, n=132)	23% (56) 23% (30)	28% (68) 23% (31)	16% (39) 19% (25)	15% (37) 19% (8)	5% (13) 6% (8)	13% (32) 10% (13)
Farmed fish are fed fish feed which may not be their natural feed (n=243, n=132)	18% (44) 24% (32)	35% (85) 44% (58)	17% (41) 13% (17)	4% (10) 2% (3)	2% (4) 2% (2)	24% (59) 15% (20)
Fish farmers can control water quality. (n=244, n=132)	12% (30) 12% (16)	30% (72) 28% (37)	16% (38) 16% (21)	13% (31) 17% (22)	7% (17) 9% (12)	23% (56) 18% (24)
I would prefer local farmed shellfish over wild shellfish from other states. (n=240, n=32)	24% (57) 16% (5)	24% (57) 19% (6)	21% (50) 25% (8)	14% (33) 25% (8)	9% (22) 12% (4)	11% (26) 3% (1)
Farmed fish is fresher than fish from the wild. (n=239, n=129)	6% (15) 2% (3)	8% (19) 6% (8)	24% (58) 26% (33)	30% (72) 39% (50)	13% (30) 18% (24)	19% (45) 9% (11)
I would prefer wild local fish rather than farmed fish from other states. (n=238, n=128)	44% (104) 61% (78)	30% (71) 28% (36)	14% (33) 7% (9)	3% (8) 2% (3)	2% (5) 1% (1)	7% (17) 1% (1)
Farmed fish may have been treated with antibiotics. (n=244, n=132)	22% (54) 31% (41)	28% (68) 33% (44)	13% (31) 10% (13)	6% (14) 5% (7)	1% (2) 1% (1)	31% (75) 20% (26)
Fish farming is regulated by the government for farm practices just like land-based animal farming. (n=244, n=132)	12% (30) 12% (16)	18% (43) 19% (25)	17% (41) 20% (27)	9% (21) 11% (15)	2% (6) 1% (1)	42% (102) 37% (48)
Fish farming may have negative environmental impacts. (n=245, n=133)	18% (43) 21% (29)	20% (48) 29% (38)	13% (33) 13% (17)	13% (33) 12% (16)	4% (9) 2% (3)	32% (79) 23% (30)

Organic Food Purchases

Since one means by which to address environmental concerns with farmed seafood is to consider certification for best management practices through ecolabeling (organic certification for aquaculture is not permissible in the U.S. as yet), we assumed that consumers who are predisposed to purchasing organic foods would perhaps be predisposed to purchase ecolabeled farmed seafood if it were available. To that end, several questions related to the respondents' organic purchases were asked.

Frequency of Organic Food Purchase

Figure 10 shows that the majority of respondents purchase organic food at least weekly.



Reasons for Purchase of Organic Food

Ecolabeling of aquacultured seafood would convey to consumers that the product has been produced in a manner that protects the ecosystem. Because of protection of water quality, careful use of approved chemicals, and worker protections, there are also other food quality and community attributes associated with an aquaculture ecolabel. To determine if respondents might respond to some of these attributes of an aquaculture ecolabel, the survey included a question to elicit why respondents purchase organic food (i.e. for health reasons, to protect the environment, or to support small farmers). The data in red represents the respondents who prefer wild salmon and buy organic food weekly.

Table 6. Reasons for Purchase of Organic Food

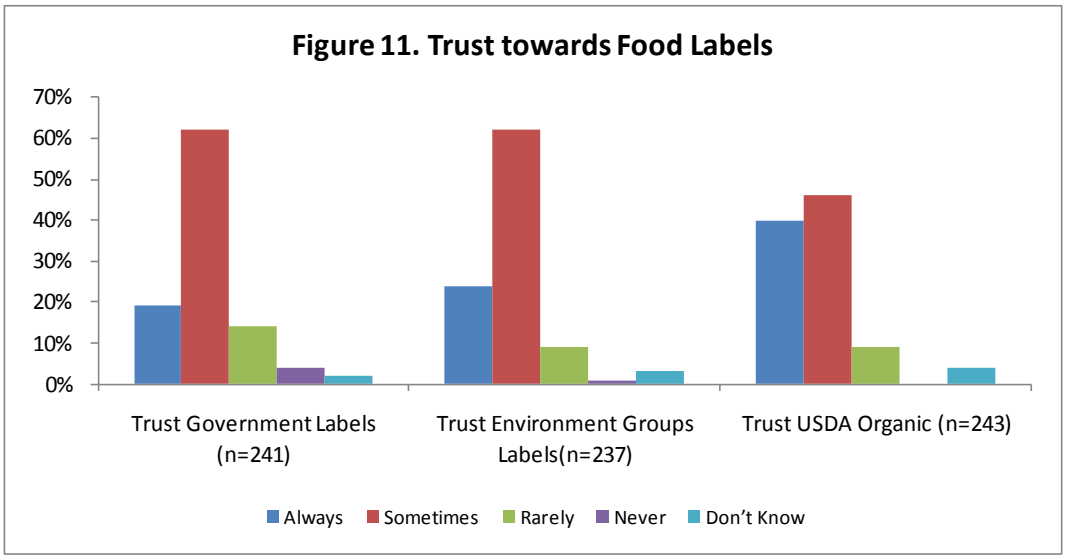
Reason to buy organic food	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Don't Know
Concern for environment (n=186, n= 116)	46% (85) 51% (59)	40% (74) 36% (41)	10% (18) 9% (11)	4% (7) 4% (5)	1% (2) 0% (0)
Concern for Health (n=188)	69% (129)	26% (48)	3% (6)	1% (1)	2% (4)
To support small farmers (n=189)	60% (114)	32% (60)	4% (8)	2% (3)	2% (4)

Most respondents (69%) purchase because of health concerns, followed by 60% to support small farmers, and 46% due to environmental concerns. However, fully 92% either strongly agree or agree that they purchase organic foods to support small farmers. Given that some of our sample was intercepted at farmers markets, this should not come as a surprise.

To investigate the correlation between preference of wild salmon and its environmental impact among the respondents who prefer wild salmon, those who chose the environmental concern as a reason to buy organic food are selected as shown in red. Fifty-one percent of them strongly agree that they buy organic food for environmental concerns sends a signal that these respondents have environmentally-driven purchase behaviors.

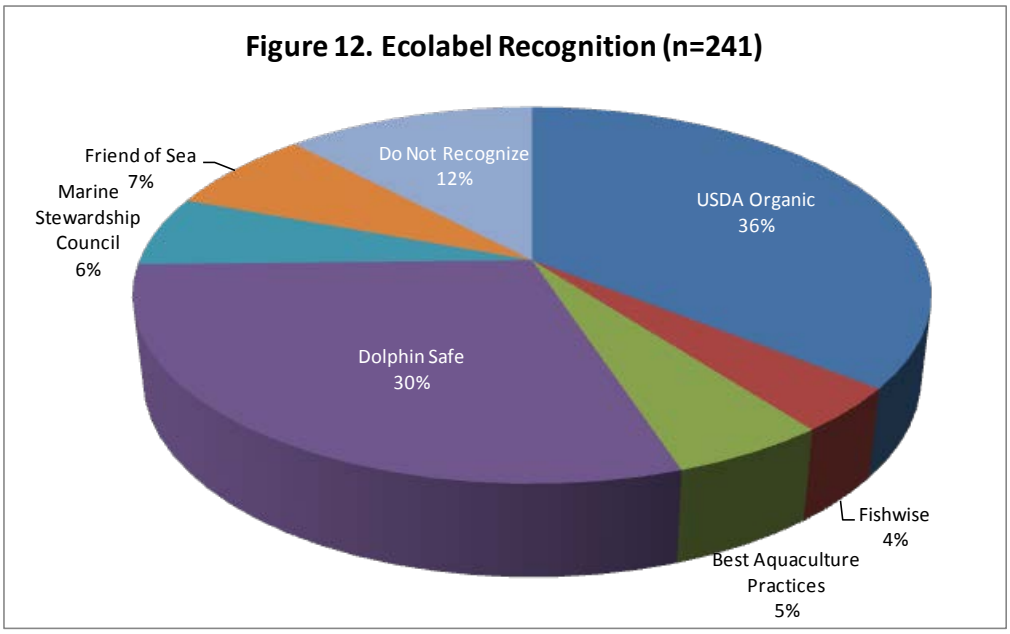
Trust in Food Labels

Food labels are an important tool to convey information on food products to consumers. This part of survey focuses on food labels as means of improving information to consumers. Given a few statements regarding food labels, the respondents were asked whether they 'always', 'sometimes', 'rarely', or 'never' trust specific food labels, or "don't know". Figure 11 shows that a large number of respondents trust the USDA organic food label, more so than generic government labels or environmental group labels.



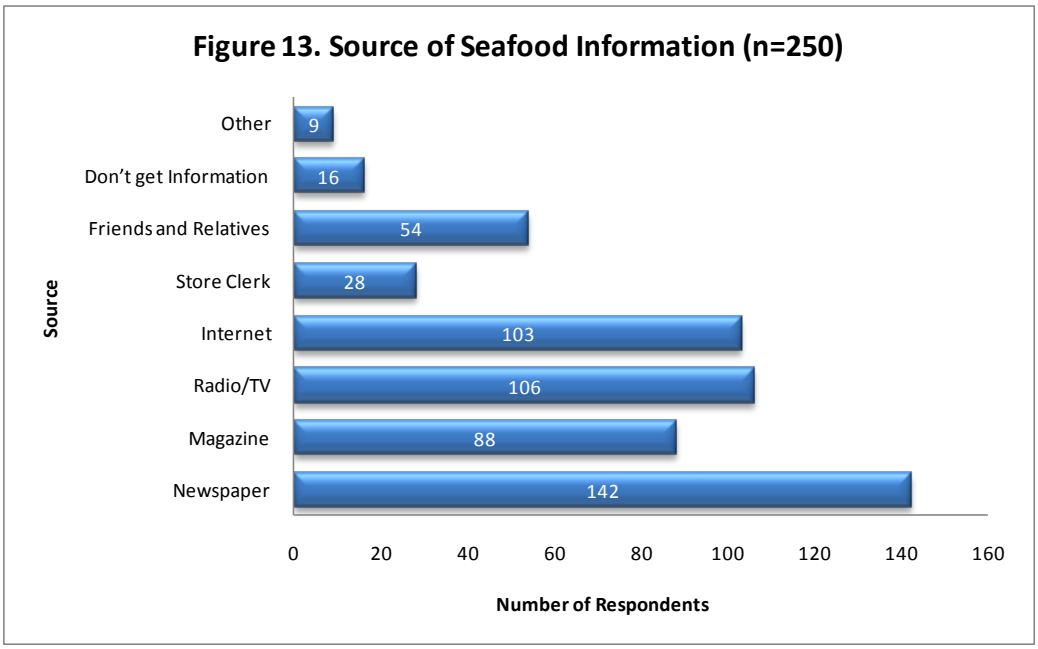
Ecolabels indicate the presence of environmental attributes

Additional specific labels pertinent to seafood, in addition to the USDA Organic label, were shown to respondents, and they were asked if they recognized any of the labels. Respondents were asked to indicate all of the labels they recognized (the appendix contains a copy of the picture of the labels shown to them). Figure 12 shows that 36% of respondents recognized the USDA Organic label, followed by 30% who recognized the dolphin-safe label. Only 6% indicated they recognized the Marine Stewardship Council (MSC) label. There may also have been some guessing, as we intentionally included labels such as Friend of the Sea and FishWise, which Rhode Island consumers are unlikely to have seen before, yet a percentage of respondents indicated they did indeed recognize the label.



Source of information on the environmental impacts of the protection of seafood

All the previous graphs substantiate the need for more and efficient methods of disseminating information on seafood, especially aquaculture. Hence, figure 13 below tabulates the sources in which the respondents can obtain information on seafood. For this question, respondents could choose as many options as applicable. Newspaper, magazine, radio/TV and internet are the main venues of information.



Conclusion

It is apparent from the results of this survey that there are several attributes of seafood which Rhode Island consumers are looking for. A marketing campaign for Rhode Island aquacultured products should capitalize upon the fact that purchase of such product support local farmers, who can provide the freshest of the products, and have control over product attributes that protect the environment and product quality.

As consumers' preferences and perception greatly influence market competitiveness of aquaculture, unintentionally confusing information on aquaculture can influence current and potential environmental and economic benefits from aquaculture in Rhode Island and other sources. A study such as this survey provides an opportunity to improve seafood marketing efforts for all seafood, regardless of production method, but particularly for local and sustainable aquaculture in Rhode Island.

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Appendix

Example Survey (1 of 6 versions)

A Survey on Consumer Preferences for Seafood

Department of Environmental and Natural Resource Economics
University of Rhode Island

Thank you for agreeing to participate in our research study. The purpose of this study is to learn more about your seafood preferences and interest in seafood. Feel free to ask questions at any point as you move through the survey. The survey should take less than 15 minutes to complete.

1. **Where do you purchase <u>most</u> of your seafood for home consumption?** (*Please check all that apply*)
   a) Supermarkets (e.g. Stop and Shop, Shaw's, Rochs) ◯
   b) Specialty supermarkets (e.g. Whole Foods, Belmonts, Dave's) ◯
   c) Warehouse retailer (e.g. BJ's, Costco, Sam's Club, Wal-Mart, Target) ◯
   d) Direct delivery (e.g. Stop & Shop Peapod) ◯
   e) Farmer's market ◯
   f) Fish store ◯
   g) Directly from fisherman ◯
   h) Others (*please specify*)_____ ◯

2. Please indicate the importance of each of the following factors in your decision to purchase seafood. *(Please circle one choice per question)*

		Very Important	**Somewhat Important**	**Somewhat Unimportant**	**Unimportant**	**Unsure/ Don't know**
a)	Whether it was previously frozen	1	2	3	4	5
b)	Whether it is locally harvested	1	2	3	4	5
c)	Healthfulness and nutrition	1	2	3	4	5
d)	Price	1	2	3	4	5
e)	Ease of preparation	1	2	3	4	5
f)	Whether it is farmed or wild	1	2	3	4	5
g)	Species (i.e. how it tastes)	1	2	3	4	5
h)	Level of health risks from possible contaminants.	1	2	3	4	5
i)	Freshness	1	2	3	4	5
j)	Whether the environment is adversely impacted when caught wild or farmed	1	2	3	4	5
k)	Availability of recipes	1	2	3	4	5
l)	Country of Origin	1	2	3	4	5

3. How often do you eat the following products at home or at a restaurant? (*Please check the appropriate box for each product*)

		Salmon	**Shrimp**	**Catfish**	**Tilapia**	**Oysters**	**Mussels**
a)	Once a week or more						
b)	Every two weeks						
c)	Once a month						
d)	Once every three months						
e)	Once every six months						
f)	Once per year						
g)	Never						

4. For each species above that you indicated you <u>never</u> consume, please indicate below why you do not eat it? (*Please check the appropriate box for each product*). **If this does not apply to you, please skip to question 5.**

		Salmon	**Shrimp**	**Catfish**	**Tilapia**	**Oysters**	**Mussels**
a)	Dislike taste						
b)	Food safety concern						
c)	Price						
d)	Hard to cook						
e)	Environmental concerns						
f)	Other (*please specify*)						

5. For those species you do purchase, do you have a preference for a particular method of harvest? (*Please check the appropriate box for each column*)

		Salmon	**Shrimp**	**Catfish**	**Tilapia**	**Oysters**	**Mussels**
a)	Wild						
b)	Farmed						
c)	No preference						
d)	Don't know						
e)	Don't buy						

i) In what ways are you informed about the production method of the seafood you purchase? (*Please check all that apply*)

a) Point of purchase signs ◯

b) Read the label ◯

c) Other (*please specify*)_____ ◯

6. Please read each statement carefully and indicate whether these statements reflect your beliefs about farmed seafood. (*Please circle one answer for each statement.*)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not sure/ don't know
Farmed shellfish tastes equally good as wild shellfish.	1	2	3	4	5	6
Fresh farmed fish taste better than previously frozen wild fish.	1	2	3	4	5	6
Farmed fish are fed fish feed which may not be their natural feed.	1	2	3	4	5	6
Fish farmers can control water quality.	1	2	3	4	5	6
I would prefer local farmed shellfish over wild shellfish from other states.	1	2	3	4	5	6
Farmed fish is fresher than fish from the wild.	1	2	3	4	5	6
I would prefer wild local fish rather than farmed fish from other states.	1	2	3	4	5	6
Farmed fish may have been treated with antibiotics.	1	2	3	4	5	6
Fish farming is regulated by the government for farm practices just like farming land-based animals (e.g. cattle, hogs, chicken)	1	2	3	4	5	6
Fish farming may have negative environmental impacts.	1	2	3	4	5	6

7. During the past two years, have you changed your consumption of any of the following farmed seafood products? (*Please check any that apply*)

	Increased	Remained the same	Decreased
Farmed Salmon	◯	◯	◯
Farmed Shrimp	◯	◯	◯
Farmed Catfish	◯	◯	◯
Farmed Tilapia	◯	◯	◯
Farmed Oyster	◯	◯	◯
Farmed Mussels	◯	◯	◯

8. **For each of those farmed seafood products for which your consumption has changed, please specify the reason for the change by placing an 'X' next to the appropriate reasons (check all that apply)**. *If your consumption has remained the same for all the products, please skip to question 9.*

	Salmon	**Shrimp**	**Catfish**	**Tilapia**	**Oysters**	**Mussels**
Price						
Taste						
Availability						
Health Concerns						
Environmental Concerns						
Country of Origin						
Quality						
Other (Please write in)						

9. **Where do you most frequently obtain information on the environmental impacts of the production of seafood?** (*Please check the appropriate answer*)

Newspaper ◯
Magazine and journal ◯
Radio/television ◯
Internet ◯
Store clerk/store messages ◯
Friend/relative ◯
Don't get such information ◯
Others (*please specify*)_____

10. **Food and seafood is sometimes sold with ecolabels which indicate the presence of environmental attributes. <u>Please look at the labels on the handout</u>, and check off any of the labels you recognize.**

Marine Stewardship Council ◯
Best Aquaculture Practices ◯
Friend of the Sea ◯
Fish Wise ◯
USDA Organic ◯
Dolphin Safe ◯
I do not recognize any of these labels ◯

11. Seafood Choice Decisions

Assume that a new certification program is being introduced for farmed fish. This program will ensure that the farmer will raise the fish to meet specific standards created in consultation with scientists, based on the best scientific evidence. These farmed fish standards specify that only approved antibiotics may be used, the water quality in which the fish are raised will be clean, the fish will not be densely stocked, and the fish will be fed only sustainable and approved feed. Uncertified farmed products will not have that guarantee.

The standards may be certified by a US government agency, an environmental group or there may be no information provided regarding which organization certified that the product meets the standards.

You will be presented below with two sets of four questions: the first set is for salmon, the second set is for shrimp. For each choice below, compare the products and choose which product you would buy, if either. Please assume each product is equal in availability, appearance, freshness, and apparent quality.

Question 1 (*Please check which product you prefer*)

A	**B**	**C**
Salmon 	Salmon 	I prefer neither of these products
$10.99 / lb.	**$14.99 / lb.**	
Farmed	Wild Alaskan	
Meets the standards		
Certified by an environmental group		
◯	◯	◯

Question 2 *(Please check which product you prefer)*

A	B	C
Salmon 	Salmon 	I prefer neither of these products
$13.99 / lb.	**$11.99 / lb.**	
Farmed	Farmed	
Meets the standards	Meets the standards	
No certification	Certified by a U.S. government agency	
◯	◯	◯

Question 3 *(Please check which product you prefer)*

A	B	C
Salmon 	Salmon 	I prefer neither of these products
$13.99 / lb.	**$10.99 / lb.**	
Farmed	Farmed	
Meets the standards		
Certified by an environmental group		
◯	◯	◯

Question 4 *(Please check which product you prefer)*

A	B	C
Salmon 	Salmon 	I prefer neither of these products
$11.99 / lb.	**$14.99 / lb.**	
Farmed	Farmed	
Meets the standards	Meets the standards	
Certified by a U.S. government agency	Certified by an environmental group	
⬭	⬭	⬭

Now please choose among the following pairs of shrimp products.

Question 5 (*Please check which product you prefer*)

A	B	C
Large , Peeled, Uncooked Shrimp 	Large , Peeled, Uncooked Shrimp 	I prefer neither of these products
$16.99 / lb.	**$12.49 / lb.**	
Farmed	Farmed	
Meet the standards	Meet the standards	
Certified by an environmental group	No certification	
⬭	⬭	⬭

Question 6 (*Please check which product you prefer*)

A	B	C
Large, Peeled, Uncooked Shrimp 	Large, Peeled, Uncooked Shrimp 	I prefer neither of these products
$10.99 / lb.	**$9.99 / lb.**	
Farmed	Wild	
⬭	⬭	⬭

Question 7 (*Please check which product you prefer*)

A	B	C
Large , Peeled, Uncooked Shrimp 	Large , Peeled, Uncooked Shrimp 	I prefer neither of these products
$14.99 / lb.	**$16.99 / lb.**	
Farmed	Farmed	
Meet the standards	Meet the standards	
No certification	Certified by a U.S. government agency	
⬭	⬭	⬭

Question 8 (*Please check which product you prefer*)

A	B	C
Large, Peeled, Uncooked Shrimp 	Large, Peeled, Uncooked Shrimp 	I prefer neither of these products
$15.99 / lb.	**$14.99 / lb.**	
Farmed	Farmed	
Meet the standards		
Certified by a U.S. government agency		
⬭	⬭	⬭

12. How often do you purchase organic fruits, vegetables or meats? *(Please check the answer that is most appropriate)*

		Frequency
a)	Once a week or more	◯
b)	Every two weeks	◯
c)	Once a month	◯
d)	Once every two months	◯
e)	Once every six months	◯
f)	Less than once per year	◯
g)	Never	◯

i) If you indicated that you purchase organic products more than once every two months, please circle the correct answer for each statement. ***(Otherwise skip to question 13.)***

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Don't Know
You buy organic food due to concern for the environment	1	2	3	4	5
You buy organic food because you are concerned for your health or the health of your family	1	2	3	4	5
You buy organic products to support small farmers	1	2	3	4	5

13. Please indicate your level of agreement with the following statements (*Please circle the appropriate answer***)**

	Always	Sometimes	Rarely	Never	Don't know
You trust food labels sponsored by governmental agencies	1	2	3	4	5
You trust food labels sponsored by environmental groups	1	2	3	4	5
You trust the USDA Organic certification program to ensure the food product you buy is really organically produced	1	2	3	4	5

14. Demographic Information

14.1 What is your gender?

- Male ◯
- Female ◯

14.2 In which age group are you?

- 18-25 ◯
- 26-35 ◯
- 36-45 ◯
- 46-55 ◯
- 56-65 ◯
- 66 or above ◯

14.3 Town of residence _____

14.4 What is the appropriate choice to describe you?

- African American ◯
- Asian ◯
- Hispanic/Latino ◯
- White ◯
- Others (*please specify*)_____

14.5 What is your current employment status?

- Employed or self-employed ◯
- Retired ◯
- Full-time homemaker ◯
- Student ◯
- Unemployed ◯

14.6 What is your level of education?

- Less than high school ◯
- High school ◯
- Some college or technical degree ◯
- College graduate ◯
- Post Graduate degree ◯

14.7 What is your household's annual pre-tax income?

- Less than 39,999 ◯
- $ 40,000 to $ 79,999 ◯
- $ 80,000 or more ◯

14.8 How many people of your household fall into the age groups, including yourself?

Less than 8 years old	_____
8 – 25years old	_____
26 – 40 years old	_____
41 – 60 years old	_____
61 or older	_____

14.9 Do you belong to an environment organization (e.g. New England Aquarium, World Wildlife Fund, Environmental Defense, Greenpeace)?

Yes ◯
No ◯

Thank you. We appreciate your time. Please collect your $5 as a token of our appreciation.

 **Marine Stewardship Council**	 **Best Aquaculture Practices**
 **Friends of the Sea**	 **Fish Wise**
 **USDA Organic**	 **Dolphin Safe**