

Consumer Preference and Market Potential for Alaska Salmon in China: Preliminary Analysis

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Table of Contents

Introduction	1
Survey and data.....	5
Analysis and results	7
Consumer purchase patterns and preferences for seafood	7
Consumer salmon consumption habits and preferences	
for salmon attributes.....	9
Consumer perceptions of and attitudes toward Alaska salmon	13
Conclusions and suggestions	15
Product forms.....	15
Market segmentation	15
Sustainability and the environment	15
Intrinsic quality.....	15
Product origin	15
Acknowledgments.....	16
References	16

Consumer Preference and Market Potential for Alaska Salmon in China: Preliminary Analysis

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This preliminary analysis of Chinese consumer preference structures for Alaska salmon provides information to seafood producers and participants in the seafood marketing chain interested in selling Alaska salmon in China. The focus is on harvest methods (wild or farmed), place of production (Alaska), use of product forms (head, whole round, frame, etc.), methods of preparation, and willingness to purchase. The study shows promise that Chinese consumers would be willing to choose Alaska salmon because it is caught wild and harvested sustainably, indicating potential for increasing sales of Alaska salmon in China.

1. Introduction

The growing Chinese demand for food and natural resources provides Alaska, a natural resource-rich state, with a potential for economic growth through expanded trade. In 2011, Alaska's exports increased 26.1% from the previous year to \$5.2 billion, the highest value of annual exports in history. The year 2011 also marked the first time China topped the list of Alaska's export markets. That year the value of exports to China reached \$1.4 billion, a 56.2% increase from 2010 (State of Alaska Governor's Office 2012). Since 2011, China has been Alaska's number 1 export market.

Seafood is the primary category among Alaska's exports to China. In 2014, Alaska seafood exported to China was valued at \$783.5 million, which accounted for 54% of all of Alaska's exports to China (State of Alaska Governor's Office 2014) (Figure 1.1).

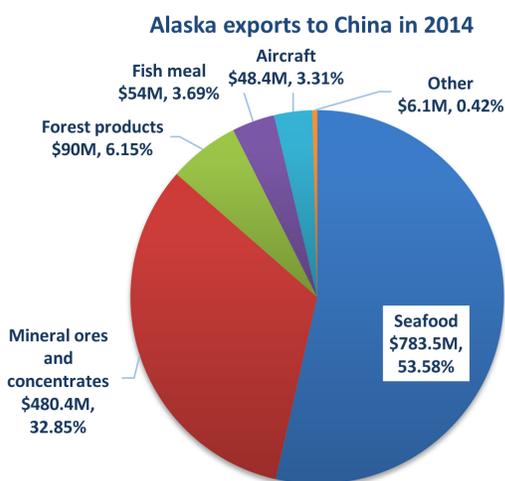


Figure 1.1. Alaska exports to China in 2014 by category, in million dollar value and percent. Source: State of Alaska Governor's Office, Office of International Trade.

According to the Alaska Seafood Marketing Institute (ASMI), in 2010 wild-caught salmon, including pink, chum and sockeye, made up 37% of Alaska's seafood exports to China, which is the largest seafood category. Some seafood exported to China is processed and then re-exported to other countries, while some is consumed within the Chinese domestic market (Salov 2012). According to recent studies, however, there was a decline in chum and pink salmon exports due to a decrease in processing in China for re-export coupled with below-average pink salmon harvests in Alaska. Conversely, sockeye salmon export has risen reflecting a growing demand from Chinese consumers for higher-value wild seafood (ASMI 2013).

In recent decades China has experienced rapid economic development, and is now the second largest economy in the world (The World Bank 2015). China's growing economy has been accompanied with the rise of a middle class who have significant disposable income. Consequently, in China there is now a large consumer segment that desires and can afford high-end food products, especially imported products of high quality and good reputation. In this regard, salmon has gained increasing popularity among those consumers due to its health benefits and high quality. A growing number of upscale hotels and restaurants in China now feature Alaska salmon prepared for Chinese, Japanese, and Western cuisines (Figures 1.2-1.5).



Figure 1.2. Salmon sold at Carrefour supermarket in China.

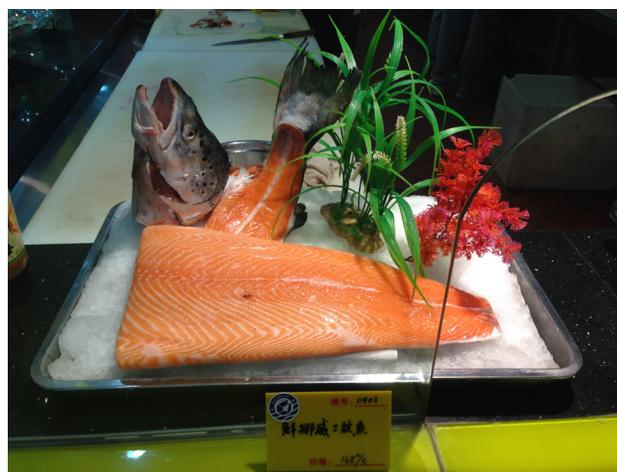


Figure 1.3. Salmon displayed as ingredients in a seafood restaurant in China.



Figure 1.4. Salmon displayed as ingredients in a Japanese restaurant in China.

Due to environmental pollution and a number of food safety scandals in China in recent years, Chinese consumers have growing concerns about food safety and the possible contamination of their food supply. For some foods, there appears to be strong demand for imported brands sourced from clean and safe natural environments. Therefore, being aware that Alaska wild salmon is from such an environment, Chinese consumers should value it differently from domestic or imported farm-raised salmon. It is a reasonable hypothesis that in addition to superior taste and abundant nutritional value of Alaska wild salmon, the “harvested in Alaska” mark itself attracts Chinese consumers and price premiums can be applied accordingly (as shown for Norway products in Figures 1.6-1.7).

There are significant differences between US and Chinese consumers in how different parts of fish are con-



Figure 1.5. Salmon sushi displayed on the menu in a Japanese restaurant in China.



Figure 1.6. Supermarket shows picture of Norway salmon farming environment to promote Norwegian salmon.

sumed. In the United States, most salmon consumers eat only the fillet. Even though other parts of the fish are for sale in the market from time to time, the prices for these are usually lower. In contrast, Chinese culinary traditions include cooking fish heads, tails, and bones for various soups and stews that are considered healthy meals. As a result, these seemingly low-value parts, considered waste to most US consumers, can potentially carry significant economic value as seafood products to be exported to China (Figures 1.8-1.13).



Figure 1.7. Restaurant uses placemat to promote clean environment of Norwegian salmon.



Figure 1.8. Salmon heads at Carrefour China, 68 CNY per kg (4.99 USD per lb).



Figure 1.11. Salmon skins at a market in China, 33.6 CNY per kg (2.46 USD per lb).



Figure 1.9. Salmon skins and bones at Carrefour China, 68 CNY per kg (4.99 USD per lb).



Figure 1.12. Grilled salmon bones appetizer at a restaurant in China, 15 CNY (2.42 USD).



Figure 1.10. Salmon bones at a market in China, 69.6 CNY per kg (5.10 USD per lb).



Figure 1.13. Salmon head soup at a restaurant in China, 69 CNY (11.13 USD).

Due to increased purchasing power, environmental challenge, and consumer preference for high quality and safe food products, it can be predicted that China's status as the top importer of Alaska seafood products will be sustained and strengthened. However, while opportunities for increasing demand of Chinese consumers for Alaska salmon look promising, there still is limited understanding of consumer preferences for Alaska salmon and attitudes for product-specific attributes. Therefore, it is necessary and important that social and economic research be conducted with the objec-

tive of better understanding Chinese consumers' preference for salmon and its attributes, and assessing their perceptions of Alaska's wild salmon species.

This publication reports on an assessment of both emerging demand and market potentials for Alaska salmon in the Chinese market, by evaluating urban Chinese consumer preferences. The collected information will be helpful for seafood producers in Alaska to achieve maximum penetration into the Chinese market and to increase the competitiveness of the Alaska seafood industry in the international marketplace.

2. Survey and data

We designed a survey that included questions on consumer purchase patterns and preference for seafood, consumer salmon consumption habits and preference for salmon attributes, consumer perceptions of and attitudes toward Alaska salmon, their willingness to purchase Alaska salmon fillet and heads/bones, and so on. Consumer demographic information was also collected. Please note that analysis of consumer preferences in species choice, organoleptic parameters (taste, sight, smell, touch), and intrinsic quality has yet to be conducted.

The survey was administered by the research team with locally recruited graduate student interviewers during June and July 2015 at three representative cities in China: Beijing, Shanghai, and Guangzhou. Beijing, in North China, is China's capital city and the nation's political, cultural, and educational center. Shanghai, located in East China, the largest city by population, is a global financial center and a transportation hub with the world's busiest container port. Guangzhou,

in South China, is the third largest city and also a nationally important transportation hub as well as a significant trading port (Figure 2.1).

In each city, we selected nine representative big supermarkets or hypermarkets (such as Carrefour and Walmart) within the urban area. Each supermarket had salmon for sale in their fresh food department. Teams of two students conducted the survey at the supermarkets randomly assigned to them (Figure 2.2). At random, they invited shoppers to participate in the survey. In total, we interviewed 1,028 respondents with 340 in Beijing, 348 in Shanghai, and 340 in Guangzhou.

After removing observations with missing or erroneous demographic information, there remained 1,017 valid observations in the data set for this analysis. Table 2.1 displays the descriptive statistics of demographic variables. In our survey, 35% of the respondents were male and 65% were female. The fact that female respondents outnumber males



Figure 2.1. China map showing locations of three representative cities: Beijing, Shanghai, and Guangzhou.



Figure 2.2. Graduate student enumerators interview shoppers at a seafood counter in a supermarket.

by almost double is consistent with numerous other consumer research surveys conducted in shopping centers. For most households, the female member usually goes grocery shopping. The average age of the respondents was 37 years with a range from age 18 to 85. About 26% of the respondents attended some high school or lower education, 22% had some college education including vocational schools or an associate degree, 37% had a bachelor's degree, and 15% had a graduate degree.

On average, there are three adults and 0.66 children in each household. Approximately 9% of respondents reported an annual household income below 50,000 CNY (around 8,065 USD), 11% earned between 50,000 CNY and 70,000 CNY (around 11,290 USD), 17% earned between 70,000 CNY and 100,000 CNY (around 16,129 USD), 26% earned between 100,000 CNY and 150,000 CNY (around 24,193 USD), and 37% earned above 150,000 CNY. Over the past two years, the annual household income increased for 50% of households, remained the same for 46% of households, and decreased for 3% of households. Roughly 24% of respondents migrated from a small town or countryside to the city in the past two years.

Table 2.1. Descriptive statistics of demographic variables. Source: Authors' survey.

Variable	Description	Mean	SD	Minimum	Maximum
Male	=1 if male; =0 otherwise	0.35	0.48	0	1
Age	Year	37.20	13.51	18	85
Adult	Number of adults in household	2.97	1.20	1	12
Child	Number of children in household	0.66	0.82	0	9
Education					
High school or lower	=1 if high school or lower; =0 otherwise	0.26	0.44	0	1
Some college	=1 if vocational school or associate degree; =0 otherwise	0.22	0.42	0	1
Bachelor's degree	=1 if bachelor's degree; =0 otherwise	0.37	0.48	0	1
Graduate degree	=1 if graduate degree; =0 otherwise	0.15	0.35	0	1
Annual household income					
"inc_below5"	=1 if below 50,000 CNY; =0 otherwise	0.09	0.29	0	1
"inc_5to7"	=1 if ≥50,000 and <70,000 CNY; =0 otherwise	0.11	0.31	0	1
"inc_7to10"	=1 if ≥70,000 and <100,000 CNY; =0 otherwise	0.17	0.37	0	1
"inc_10to15"	=1 if ≥100,000 and <150,000 CNY; =0 otherwise	0.26	0.44	0	1
"inc_above15"	=1 if ≥150,000 CNY; =0 otherwise	0.37	0.48	0	1
Annual household income change					
Increase	=1 if income increased over last two years; =0 otherwise	0.50	0.50	0	1
Same	=1 if income stayed the same over last two years; =0 otherwise	0.46	0.50	0	1
Decrease	=1 if income decreased over last two years; =0 otherwise	0.03	0.18	0	1
Migrant	=1 if migrated to city over last two years; =0 otherwise	0.24	0.43	0	1

3. Analysis and results

In this section, we analyze the collected survey data and summarize the results in three subsections: Consumer purchase patterns and preferences for seafood; Consumer salmon consumption habits and preferences for salmon attributes; and Consumer perceptions of and attitudes toward Alaska salmon.

Consumer purchase patterns and preferences for seafood

In the survey, we asked consumers how often they consumed seafood over the last two years. Figure 3.1 shows the results. We found that the majority of consumers (83.5%) eat seafood at least once a month, and 42.8% of the consumers eat seafood between once a week and daily.

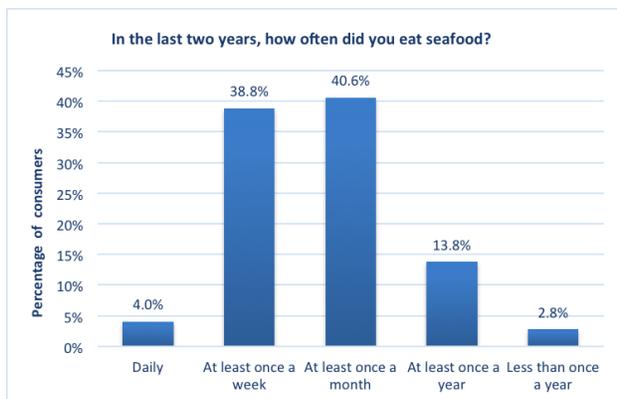


Figure 3.1. Consumer seafood consumption frequency.

Because the survey was administered to shoppers near the seafood section at supermarkets in top-line cities, these statistics are expected to be higher than the national average or even the urban average. However, these are the consumer segments we are interested in and will be the ones that have the greatest potential to be consumers of these products in the future.

In general, Chinese consumers appreciated the health benefits of seafood. Figure 3.2 shows that most consumers (66.5%) considered seafood as more healthful than other foods. Another 29.4% of the consumers considered seafood about as healthful as other foods. Only 4.1% of the consumers considered seafood relatively unhealthy.

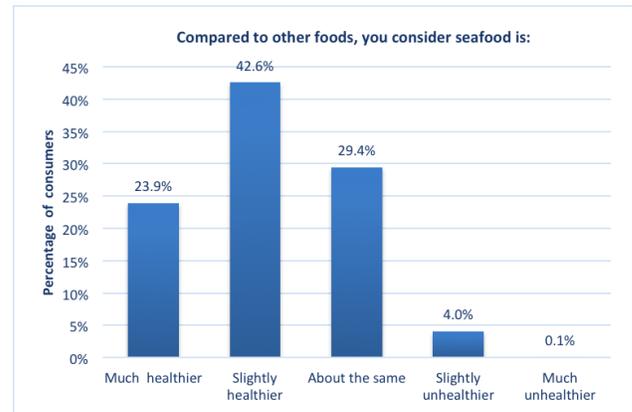


Figure 3.2. Consumer perception of health benefits of seafood.

Given that Alaska salmon is wild-caught and correspondingly has a higher health benefit, it is important to know Chinese consumers' preferences for wild versus farm-raised seafood. We asked consumers whether they often buy wild seafood, farm-raised seafood, or both in order to understand their preference for how their seafood was raised. In Figure 3.3, we show that 25.3% of the consumers had a strict preference for wild seafood while 11.2% had a strict preference for farm-raised seafood. About 39.7% of the consumers buy both, indicating no strict preference for how their seafood was raised. Approximately 23.8% of the consumers did not pay attention to or did not understand the difference, which may indicate a consumer segment that the Alaska seafood industry can target for further education on the benefits of consuming wild seafood.

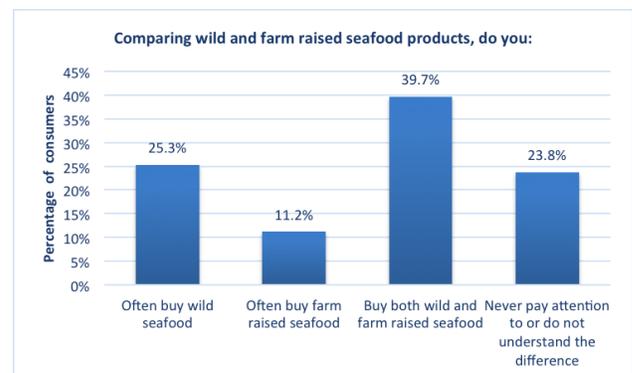


Figure 3.3. Consumer preference for method of seafood harvest.

To explore the potential of exporting Alaska salmon into the markets in China, preserving product freshness while minimizing transportation costs will be critical. It will be important to develop an understanding of the purchasing patterns with regard to fish preservation methods for Chinese consumers. In the survey, we asked consumers to write down the proportions of fish they purchased in 2014 as live fish in water, chilled fish, and frozen fish. Figure 3.4 shows that, on average, 64% of the fish purchased by consumers were live fish in water, 22.7% were chilled fish, and 13.3% were frozen fish. This is consistent with the tradition that consumers usually buy fish from local wet markets where the fish are kept alive in water until purchase (Figures 3.5, 3.6, and 3.7).

Thinking about the fish you purchased in 2014, what are the percentages of:

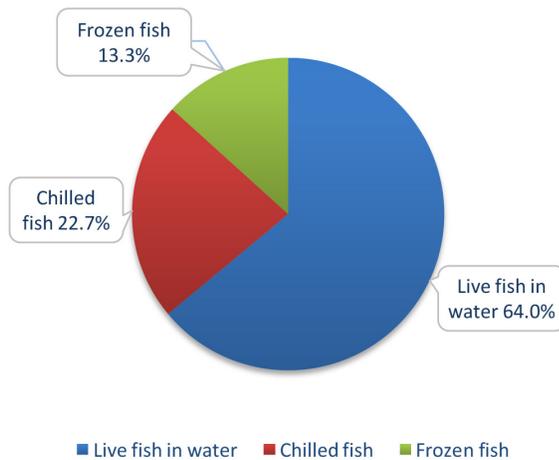


Figure 3.4. Consumer preference for fish preservation method.



Figure 3.5. Live fish in tanks sold in a supermarket.



Figure 3.6. Chilled fish sold in a supermarket.



Figure 3.7. Frozen fish sold in a supermarket.

In the survey we provided consumers a list of fish parts that included: whole, boneless fillet, bone-in steak/chunk, head, tail, bone, and skin. We then asked them to rank the top three parts they eat most often. The percentage of consumers choosing different fish parts as the most often eaten is summarized in Figure 3.8. About 73.3% of consumers eat whole fish most often.

In Chinese food culture, fish is considered a symbol of abundance and prosperity. It is especially critical to have fish on the dinner table during festivals and celebrations. At banquets, it is customary to serve the entire fish, presenting it with the head pointing toward the honored guest (Wu 2015). The most popular kinds of fish consumed by Chinese include carp, grass carp, crucian, and sea bass. These fish are harvested at a size that is just about perfect to be served on a traditional fish plate and then shared by all the guests at the table. Also, from a culinary skills perspective, cooking a whole fish delicately is always thought of as demonstrating the chef has a high level of skill.

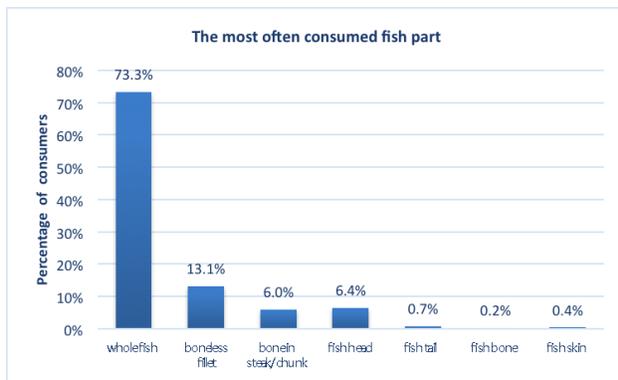


Figure 3.8. The most often consumed fish part.

Figure 3.9 summarizes the percentage of consumers choosing different fish parts as one of the three most often consumed. The fact that whole fish, boneless fillet, bone-in steak/chunk, and fish heads are chosen by most consumers indicates those products should be preferred when Alaska salmon is exported to China. In particular, it is especially valuable information to Alaska fish processors that fish heads are a very popular product among Chinese consumers.

Consumer salmon consumption habits and preferences for salmon attributes

In the survey we asked how often Chinese consumers included salmon as part of their general seafood consumption over the past two years. Figure 3.10 shows the consumers' general seafood consumption and salmon consumption side-by-side for comparison. Compared to seafood as a whole, salmon is consumed less frequently. For example, while 38.8%

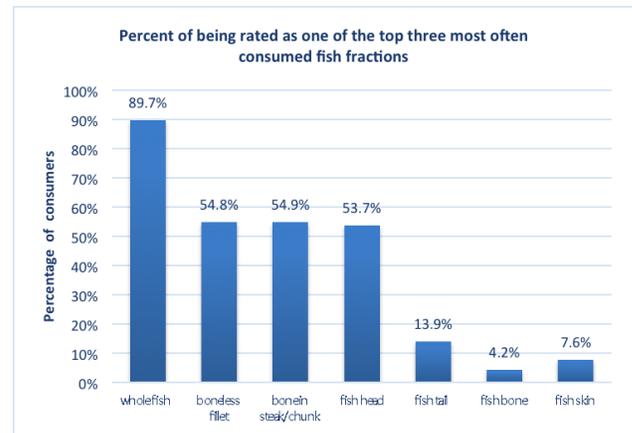


Figure 3.9. Percentage of being rated as one of the top three consumed fish parts.

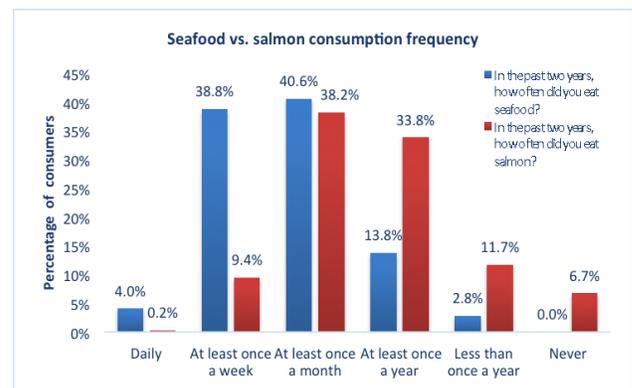


Figure 3.10. Consumer seafood vs. salmon consumption frequency.

of consumers eat seafood at least once a week, only 9.4% of consumers eat salmon at least once a week. And 6.7% of surveyed consumers have never eaten salmon at all. The limited availability of salmon in China and its relatively high price both contribute to reduced salmon consumption. In addition, the fact that salmon has a very different flavor and texture from most of the fish species traditionally consumed in China may also affect the acceptability of salmon.

To better understand the role of income in determining different salmon consumption frequencies, we compared income of salmon consumers divided into different groups according to how often they eat salmon (Figure 3.11). We also compared the age of consumers among different consumption frequencies (Figure 3.12). In Figure 3.11, in the categories of higher consumption frequencies (i.e., at least once a week, at least once a month, at least once a year), consumers with higher incomes (annual household income above 150,000 CNY [24,193 USD]) account for the highest percent compared to consumers in lower income groups. All consumers

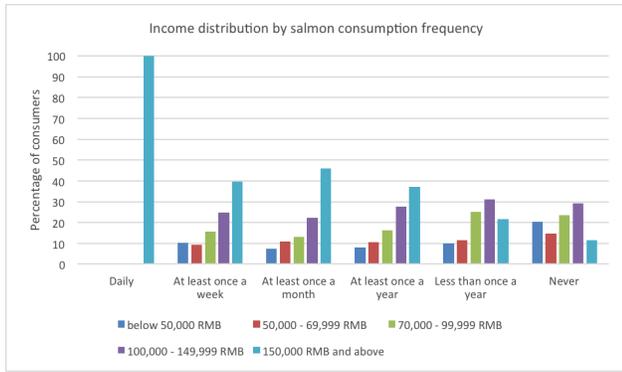


Figure 3.11. Income distribution by salmon consumption frequency.
Note: 50,000 CNY is around 8,065 USD; 70,000 CNY is around 11,290 USD; 100,000 CNY is around 16,129 USD; 150,000 CNY is around 24,193 USD.

eating salmon daily have relatively high incomes. Conversely, among those who never eat salmon, only about 10% have relatively high incomes. Interestingly those with middle incomes, incomes between 100,000 CNY (16,129 USD) and 150,000 CNY (24,193 USD), account for roughly the same proportion (between 20% and 30%) of consumers across all frequencies of consumption. This suggests that middle income consumers have not yet built consistent salmon consumption habits. This may be due to either unfamiliarity with salmon or a general lack of information about it. Product promotion on a larger scale combined with increased consumer education should prove to be good marketing strategies.

Figure 3.12 shows the survey results for age of salmon consumers across the different frequency of consumption groups. Consumers 40-49 years old account for a similar proportion in all groups. Consumers 30-39 years old account for relatively large proportions in those consumption groups who consume salmon frequently, i.e., between once a week and at least once a month. One interesting finding is that the

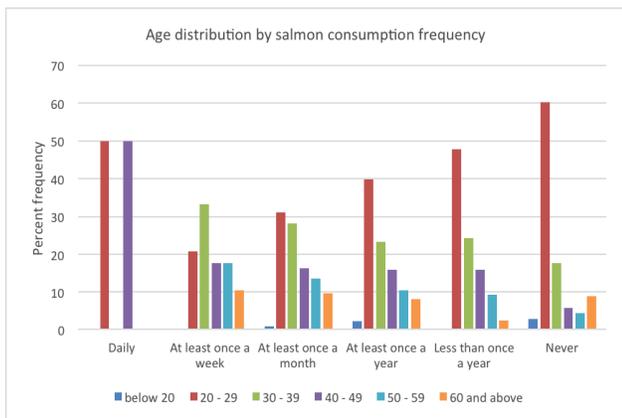


Figure 3.12. Age distribution by salmon consumption frequency.

youngest consumers, aged 20-29 years, have highly diverse salmon consumption habits, yet represent considerable proportions in all consumption groups. This finding suggests that the youngest group constitutes emerging consumers who have yet to form relatively consistent food consumption habits but appear to have experimented with various new food products. Education on the attributes of Alaska salmon and its benefits constitutes an important strategy, especially when the youngest consumer segment is being targeted.

We also asked consumers to identify the methods they used most often to prepare salmon as well as what venue they most often visited to eat salmon because the information will undoubtedly contribute to future marketing strategies. Figure 3.13 shows most of the consumers (65.4%) eat salmon raw, as sashimi or sushi. This preference probably directly relates to the introduction of salmon to China through Japanese cuisine in the early days. About 15.1% eat it steamed, boiled, or stewed, while 13.3% eat it pan fried, deep fried, or grilled (Figure 3.14-3.16).

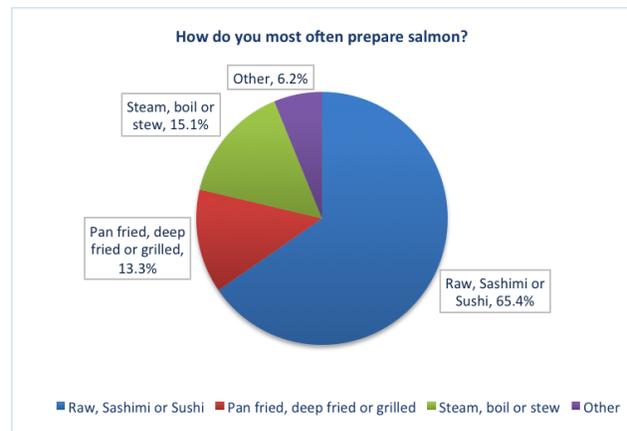


Figure 3.13. Consumer salmon preparation methods.



Figure 3.14. Salmon sushi plate served in a Japanese restaurant in China.



Figure 3.15. Steamed salmon.



Figure 3.16. Pan fried salmon.

Figure 3.17 shows that about half of the consumers (46.6%) most frequently eat salmon at restaurants, while 20.7% most frequently eat salmon at home. Another 28% eat salmon both at home and in restaurants.

In order to penetrate China's markets, Alaska salmon exporters need to target the consumer segments that dine on salmon frequently and choose the most efficient marketing channels. In Tables 3.1-3.3, we show the distribution of consumers by dining venue and preparation method, by dining venue and gender, and also by dining venue and age.

In Table 3.1, we find that 38.5% of consumers dining on salmon in restaurants prefer it raw, as sashimi or sushi. Another 17.9% dining either at home or in restaurants also consume salmon raw, as sashimi or sushi. The results indicate that restaurants and restaurant chains will be a good channel for potential Alaska salmon sales. Meanwhile, although eating salmon raw as sashimi or sushi is the most frequently preferred preparation method, there is significant potential to further educate the consumers who cook salmon at home.

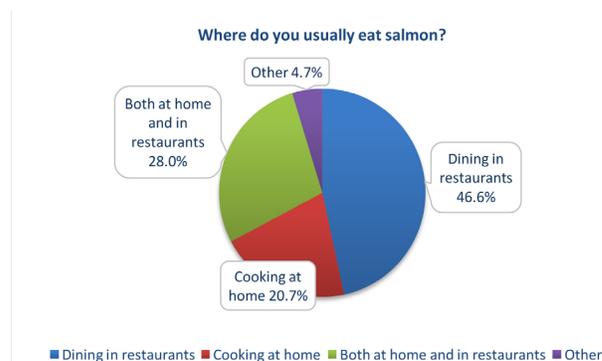


Figure 3.17. Consumers' salmon dining venues.

Table 3.2 shows that in our survey, 356 males (35%) and 661 females (65%) were interviewed. Out of the 356 male consumers, 186 (52% of males surveyed) most often eat salmon at restaurants while 57 (16%) usually eat salmon at home. Of the 661 female consumers, 288 (44%) usually eat salmon at restaurants while 153 (23%) most often eat salmon at home. Although both male and female consumers dine on salmon in restaurants more than they do at home, the difference between preferentially dining out and dining at home is larger for males than for females.

Table 3.3 shows consumers in the 20-29 and 30-39 age groups are more likely to eat salmon in restaurants than at home. Consumers in the 40-49 age group eat salmon at restaurants at about the same frequency as they do at home, while those in the 50-59 and the above 60 groups tend to eat salmon less frequently in restaurants than at home.

The quality of salmon is measured through various attributes. Understanding consumers' preferences for different salmon attributes is important for developing effective marketing strategies. In this survey, we listed six salmon attributes and asked respondents to rank them (i.e., rank 1 for the most important attribute, 2 for the second most important, to 6 for the least important). Figure 3.18 shows that, on average, consumer rank ordering of salmon attributes shows the most important is the method of harvest, then environmentally acceptable certificates, then color, then method of preservation, then country of origin, and least important is fat content. This indicates that highlighting the wild caught feature and the corresponding health benefits of Alaska salmon is likely to be a productive marketing strategy. Obtaining environmentally acceptable certificates, such as "Harvest in Alaska, Green and Sustainable" will be helpful in promoting the products. Since color was ranked as the third most important attribute, if different species of Alaska salmon products are to be exported to China, such as sock-eye and pink, educating consumers on color difference both within and between different species is likely to be of value.

Table 3.1. Consumer distribution by dining venue and preparation method for salmon.

Preparation method	Dining in restaurants	Cooking at home	Both at home and in restaurants	Other	Total
Raw, sashimi or sushi	392 (38.5%)	88 (8.7%)	182 (17.9%)	3 (0.3%)	665 (65.4%)
Pan fried, deep fried, or grilled	36 (3.5%)	49 (4.8%)	50 (4.9%)	0 (0.0%)	135 (13.3%)
Steamed, boiled, or stewed	41 (4.0%)	68 (6.7%)	44 (4.3%)	1 (0.1%)	154 (15.1%)
Other	5 (0.5%)	5 (0.5%)	9 (0.9%)	44 (4.3%)	63 (6.2%)
Total	474 (46.6%)	210 (20.7%)	285 (28.0%)	48 (4.7%)	1017 (100%)

Table 3.2. Consumer distribution by dining venue and gender.

Gender	Dining in restaurants	Cooking at home	Both at home and restaurants	Other	Total
Male	186 (18.3%)	57 (5.6%)	93 (9.1%)	20 (2.0%)	356 (35.0%)
Female	288 (28.3%)	153 (15.0%)	192 (18.9%)	28 (2.8%)	661 (65.0%)
Total	474 (46.6%)	210 (20.7%)	285 (28.0%)	48 (4.7%)	1,017 (100%)

Table 3.3. Consumer distribution by dining venue and age.

Age	Dining in restaurants	Cooking at home	Both at home and restaurants	Other	Total
Below 20	7 (0.7%)	3 (0.3%)	3 (0.3%)	1 (0.1%)	14 (1.4%)
20 - 29	235 (23.1%)	36 (3.5%)	82 (8.1%)	24 (2.4%)	377 (37.1%)
30 - 39	122 (12.0%)	44 (4.3%)	85 (8.4%)	11 (1.1%)	262 (25.8%)
40 - 49	60 (5.9%)	43 (4.2%)	52 (5.1%)	4 (0.4%)	159 (15.6%)
50 - 59	31 (3.1%)	51 (5.0%)	33 (3.2%)	5 (0.5%)	120 (11.8%)
60 and above	19 (1.9%)	33 (3.2%)	30 (3.0%)	3 (0.3%)	85 (8.4%)
Total	474 (46.6%)	210 (20.7%)	285 (28.0%)	48 (4.7%)	1017 (100%)

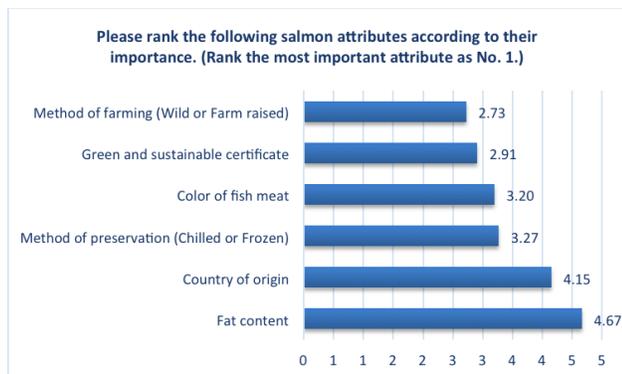


Figure 3.18. Consumer average ranking of salmon attributes based on importance.

Consumer perceptions of and attitudes toward Alaska salmon

In order to understand the perception of Alaska seafood among Chinese consumers, particularly salmon, we included survey questions directly relating to Alaska salmon. In the question that first referred to Alaska we asked how likely consumers would be to buy Alaska salmon if it was available at an acceptable price. We instructed our graduate student interviewers to ask respondents regarding their knowledge about Alaska immediately after they asked this question. If the respondents did not recognize Alaska or showed confusion about its location, our interviewers would explain that Alaska is a state in the US at the northwest corner of North America that is famous for seafood. Based on the experience gained through the interviews as well as interviewer feedback, most of the respondents do know Alaska. In addition to the benefit of globalization, this familiarity may also be due to the fact that Alaska fish oil products have been popular among Chinese consumers for several decades. Figure 3.19 shows that most of the consumers (58.9%) definitely or probably would buy Alaska salmon if it was available at an acceptable price, while 28.42% of consumers were uncertain about buying it. Fully 12.7% of the consumers would not buy it. These results indicate promising potential to support expanded Alaska salmon sales in China.



Figure 3.19. Consumer willingness to purchase Alaska salmon.

Following the purchase likelihood question, we gave survey participants an information update explaining that Alaska salmon are wild not farmed, they grow in a pure and clean environment, and their harvest is ecologically sustainable. Then we asked them again whether they would buy Alaska salmon to see how this information would alter their likelihood to purchase Alaska salmon. Figure 3.20 shows that most of the consumers (68.2%) stated they would be more likely to buy Alaska salmon after knowing it is from a pure and clean environment and is ecologically sustainable. About 29.4% stated they would be unlikely to change their mind, and only 2.4% said this would lower their willingness to purchase.

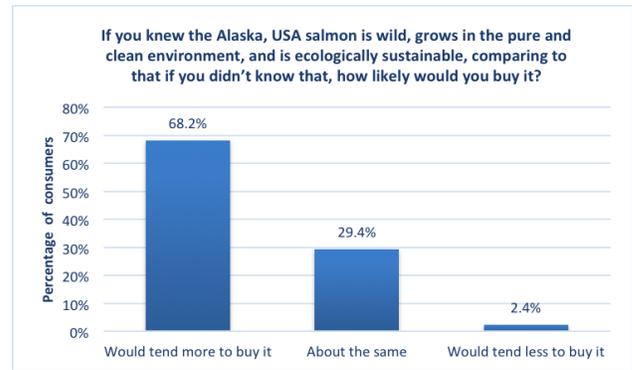


Figure 3.20. Consumer updated willingness to purchase Alaska salmon.

We divided the survey consumers into different groups based on their responses to the question of whether they would purchase Alaska salmon after the informational update in comparison to their original responses, and show the results in Figure 3.21. We found that among consumers who originally answered “definitely would buy it,” “probably would buy it,” or “might or might not buy it,” most of them tended to increase their willingness to purchase when asked the same question for second time, after learning about the clean and sustainable environment information regarding Alaska salmon. However, those consumers who originally answered “probably would not buy it” or “definitely would not buy it” tended to stay with their original decision, even after being presented with the additional information on Alaska salmon. Hence, conveying the information on the clean and sustainable background of these Alaska salmon can effectively boost sales within those specific consumer segments that already have a relatively high willingness to purchase.

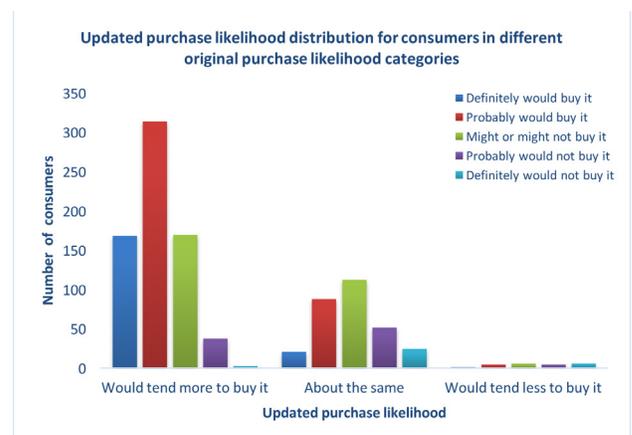


Figure 3.21. Updated likelihood to purchase Alaska salmon for consumers in different original purchase likelihood categories.

Given the promising potential for import of Alaska salmon, including heads and bones, we asked respondents how likely they would be to buy Alaska salmon heads and bones if they were available at an acceptable price that is much cheaper than salmon fillets. We found that more than half of the consumers (56.2%) would buy Alaska salmon heads and bones, 24.1% may or may not buy them, and 19.8% would definitely not buy them (Figure 3.22). These results indicate a remarkable new marketing opportunity for the Alaska fishing industry.

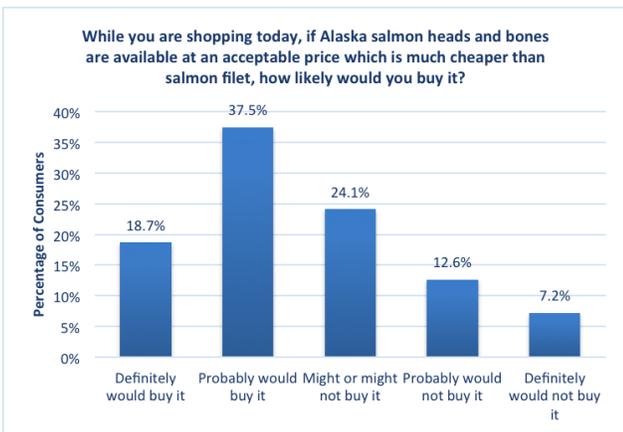


Figure 3.22. Consumer willingness to purchase Alaska salmon heads and bones.

Figure 3.23 shows consumer stated importance of an Alaska origin on their purchasing decision. Most of the consumers (60.2%) think an Alaska origin plays a very important or somewhat important role in their seafood purchasing decision. About 35.2% of consumers think an Alaska origin is not very important, and 4.6% consider an Alaska origin unimportant. This suggests using a strategy to promote the state of Alaska while promoting various seafood products in the China market may be productive.



Figure 3.23. Importance of Alaska origin in consumer seafood purchasing decisions.

To understand consumers' perception of Alaska seafood characteristics in detail, we listed four statements about Alaska seafood and asked consumers whether they agreed with them (Figure 3.24). We found that more than half of the consumers agree with the first three statements, indicating they believe Alaska seafood is safe and clean, and has better taste, texture, and nutrition than farm-raised seafood. While some consumers answered "don't know," very few disagree. For the statement about fat content, 37.9% of consumers agree that Alaska wild seafood has lower fat content than farm-raised seafood and 56.2% of consumers "don't know." Since fat content is complicated and different for different species, the answers reflect consumers' honesty.

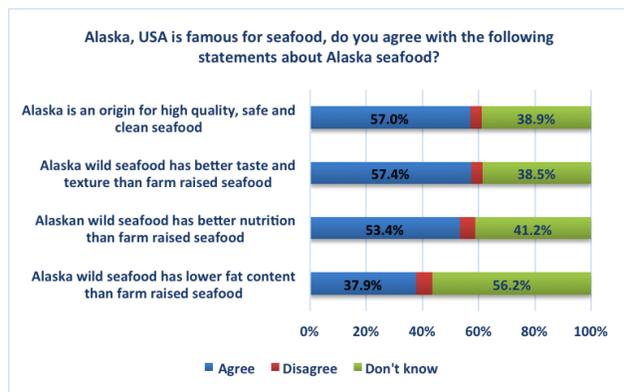


Figure 3.24. Consumer perception of Alaska seafood.

4. Conclusions and suggestions

This preliminary analysis of Chinese consumer preference structures for Alaska salmon is designed to provide information to seafood producers and participants in the seafood marketing chain interested in selling Alaska salmon in China. In the current study, we focus only on harvest methods (wild or farmed), place of production (Alaska), use of product forms (head, whole round, frame, etc.), methods of preparation, and willingness to purchase. Information such as separate species, organoleptic preferences (taste, sight, smell, touch), and intrinsic quality indices such as color and texture for the different species of Alaska salmon have not been collected and are beyond the scope of this work. Based on the survey results, this study shows promise that Chinese consumers would be willing to choose Alaska salmon because it is caught wild and harvested sustainably. This indicates potential for increasing sales of Alaska salmon in China. Several other observations and suggestions for marketing salmon in China are presented here.

Product forms

If the seafood professional would like to sell Alaska salmon directly to consumers, he/she may want to focus initially on boneless fillets, steaks, and heads. Although Chinese consumers buy whole fish most often due to tradition, whole salmon may not be favorable for retail consumers in the Chinese marketplace. This may stem from the fact that most salmon sold retail are imported farmed salmon that are larger (8 to 10 pounds whole round) and are more expensive compared to fish sourced locally or from countries that have a lower cost of production. Chinese consumers are not familiar with the four or five separate Alaska salmon species that have different characteristic sizes and are sold at different prices.

Market segmentation

To promote the export of Alaska salmon into the China market, it is important to target different consumer segments in specific ways. The younger consumers will probably dine on salmon in restaurants, while older consumers are likely to cook salmon at home. Therefore, educating consumers on different salmon preparation methods may be a good strategy for the older consumers. However, for middle-income consumers who have yet to form consistent salmon consumption patterns about Alaska salmon, educating about the different species and the sustainable nature of their harvest remains a good strategy.

Sustainability and the environment

Chinese consumers are very responsive to information about pristine environments and ecological sustainability. Various marketing strategies can be derived based on Chinese

consumer preference for salmon attributes. Because of consumers' high valuation of method of production, advertising to consumers about the wild-caught feature of Alaska salmon will highlight the advantage of the salmon and influence consumer purchasing decisions. Also, obtaining ecolabel or green/sustainable certification for Alaska salmon products in the retail environment may strengthen the Alaska salmon brand identity with consumers.

Intrinsic quality

Color of fish meat is also an attribute rated as important by consumers. Consumers may not know that there are multiple Alaska salmon species with different meat colors, size categories, and textures. Educating consumers directly on color differences for the various salmon species could be important.

Product origin

Finally, the Alaska brand plays an important role in Chinese consumer salmon purchase decisions. Currently, the marketing campaign for Alaska salmon in China has been carried out at all levels in the marketing chain. Results from this work show that continuing efforts to promote Alaska salmon at the consumer level will be beneficial to market participants. Price premiums may be charged accordingly based on consumer willingness-to-pay evaluations.

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References

- ASMI. 2013. FY 2014-2015 unified export strategy. Alaska Seafood Marketing Institute.
- Salov, A. 2012. Working with China—Alaska's growing export partner. *Alaska Business Monthly*. February.
- State of Alaska Governor's Office. 2012. Alaska exports reach record highs. *State of Alaska Governor's Office Full Press Release*. April 13.
- State of Alaska Governor's Office. 2014. Alaska export report. Office of International Trade. https://gov.alaska.gov/Walker_media/documents/alaskaexportcharts2014.pdf (accessed February 23, 2017)
- The World Bank. 2015. China overview. September 18. <http://www.worldbank.org/en/country/china/overview> (accessed February 22, 2017)
- Wu, A. 2015. Chinese Food Ingredients/What Do Chinese People Eat. *China Highlights*. December 29. <http://www.chinahighlights.com/travelguide/chinese-food/chinese-food-type.htm> (accessed February 22, 2017)