Title
Shark Fin Culture in the United States: Understanding Consumer Behaviors and Attitudes Under Proposed Policy Actions

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Scripps Institute of Oceanography  
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Masters of Advanced Science  
**Capstone Project Proposal**

**Shark Fin Culture in the United States:**  
Understanding Consumer Behaviors and Attitudes Under Proposed Policy Actions

Melissa Yuen  
June 8, 2011

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<table>
<thead>
<tr>
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Shark Fin Culture in the U.S.  
M.Yuen, 2011
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Shark Fin Culture in the U.S. .............................................................................................. M. Yuen, 2011
ABSTRACT

The notorious shark fin industry has been a targeted environmental and animal welfare issue due to the unsustainable, wasteful, and inhumane fishing practices that threaten shark species around the globe. Despite the increasing efforts of many Western environmental groups and activists, consumption in Asia, primarily China and Hong Kong, was estimated to have increased in recent years. Furthermore, countries that are not consumers in the shark fin market are depleting their local shark populations by exporting this highly demanded product. Governments have attempted to curb finning by banning trade of shark fins, imposing landing regulations, or establishing a shark sanctuary. In the United States, legislative actions are developing along the three west-coast states to prohibit import of fins. This project aims to understand the culture of shark fin consumption in the United States, indicated by awareness, behaviors and preferences. The findings will inform strategies for education and marketing campaigns, as well as support developing legislative actions that will ban trade, sale, and possession of shark fin.
Introduction: The Lucrative Business of Shark Fin Trade

Historically, fishermen had little incentive to harvest sharks relative to other fisheries options. Although some countries use it as a source of protein, there was little global demand for shark meat. Profit margins for shark catches were simply not high enough. Things changed for sharks during the 1980s, when the Beijing government ceased its condemnation of the “elitist” shark fin delicacy, which dated back to the Ming Dynasty (1369 - 1644 AD). This allowed the serving of shark fin soup, a symbol of wealth and respect, to become a mainstream tradition in China. Hong Kong makes up about 50% of the market, making it the primary importer and processor of shark fins (Pelliser, 2003).

Shark fin is one of the most expensive fish products in the world (FAO 1997). The fins and tails are cut and undergo rigorous processing that includes skinning, trimming, bleaching, and drying. Ultimately, only the collagen fibers are consumed. A well-prepared bowl of soup with a heaping portion of shark fin can demand a menu price up to $200 (Forero, 2006). Dried fins sold in traditional Chinese grocery stores or herbal emporiums can fetch $328 per pound (Pelliser 2003). For some fisherman, each complete set of dorsal and pectoral fins can provide $100 or more, depending on fin size and species, although in most cases the middlemen reap much of the profit. With such high margins along every transaction from fisherman to processor, retailer, and consumer, there is much incentive to fish sharks for fins. There are now over 125 countries involved in shark fishing that collectively funnel shark fins into Asia (Verlacar, 2007).
PROBLEM STATEMENT

The taste for fins spurred a 400% increase in shark killings over the last 50 years, amounting to as many as 100 million sharks each year (Verlarac, 2007). This vast extraction has had a toll on condrichthyan biodiversity, along with noticeable ecological disruption, in many areas around the globe. Despite the recent growing media attention, environmental and animal welfare campaigns, and international outcry condemning finning practices, consumption continued to increase by 6% based on shark fin imports between 1991 and 2000 (Clarke, 2007). Combined with incidental bycatch from indiscriminate fishing techniques such as longlines and trawling, these pressures will likely push 20 species of sharks to extinction by 2017 (Verlarac 2007).

Future Demand

An important question regarding the shark fin issue is: how will the consumption trend change in the future? A survey of restaurants that serve shark fin suggests more consistent habits of shark fin consumption. Shark fin may be widely known as a featured ingredient in a specialty soup, but it is also used in dim sum, a tapas-style brunch commonly eaten with tea every weekend.

Furthermore, China’s rapidly developing economy is shifting the country’s wealth from predominantly subsistence to discretionary income levels. As a measure of this booming wealth, China’s GDP real growth was estimated to be 9.1% in 2009 (U.S. Central Intelligence Agency 2010). There is also a shift in norms. Among the mainland Chinese, it is now widely and socially acceptable to publicly flaunt luxuries. With a population of over 1.33 billion people and growing wealth, China is a most desirable market for many industries, from automobiles to luxury goods. It can be expected that demand for shark fin will rise.

Ideally, there would be a certified, sustainable shark fin industry in which the sources of fins are well-managed shark fisheries, and sharks are utilized for meat and other products. If such regulatory and enforcement actions are in place, there can be a balance of culture with sustainable use. Unfortunately, the gears of the lucrative shark fin industry operate throughout the world. It is no surprise that current regulations and monitoring of shark fishing are not consistent if at all existent or effective in many parts of the world, leading to under-reporting and poor, unsustainable practices.

One day, shark finning may be a thing of the past. But whether it happens because there are too few sharks in the seas, or a change in consumer culture, depends on how effectively we can cut demand or create a management plan for more sustainable and less wasteful shark fishing.
SHARK FIN SOUP AND OTHER GOODS

While soup is the most common way to serve shark fin, it may be used as an ingredient in other dishes and goods. As a luxury item, it increases profit margins for an end product. For example, in China, specialty holiday goods such as mooncake can be purchased with shark fin as an ingredient in the filling, at a price up to ten-times as much as that with standard fillings (Jing Daily, 2010). Other types of servings include braised shark fin dishes\(^1\), omelet, and other creative ways of preparation. Such luxury delicacies are growing in popularity, and can indicate an increase in the frequency of consumption beyond the occasional weddings and New Year celebrations, to a weekly or even daily basis. A shift in tradition may lead to a perception that shark fin is an everyday consumable.

**Dim Sum**

Dim sum is a Chinese tradition that is similar to tapas. These small dishes are enjoyed with tea and served during brunch hours, usually on weekends. In San Francisco, dim sum is so popular that it is offered daily by some restaurants.

Dim Sum is worthy of consideration when assessing the shark fin market for two reasons. First, shark fin is sometimes used as an ingredient in dim sum dumplings. Secondly, dim sum is a casual tradition, and if people are eating shark fin dumplings commonly, it may indicate a shift towards more common consumption.

**Imitation and Vegetarian Shark Fin**

Imitation and vegetarian shark fin are options offered by select restaurants. The typical alternative to real fins is made from mung beans. Also used to make a type of noodle called “vermicelli” that is common in Chinese cuisine, the mung-bean product resembles real shark fin because it is clear and tasteless. In 2007, a Japanese company named Nikko Yuba Seizo Co. developed an imitation shark fin product made of pork gelatin in order to take advantage of the growing Chinese demand amid rising prices for real shark fin (Space Daily, 2007). Fake varieties of shark fin are much less expensive, costing about one-tenth of real shark fin prices.

It is worthwhile to know the number of restaurants that serve shark fin as an evaluation of its potential as a substitution for real shark fin. Restaurants offering the imitation or vegetarian options would not be in violation of enacted ban legislation.

In the event that legislation is not passed, imitation and vegetarian fin can be promoted as a sustainable, shark-friendly substitute. Since shark fin is in fact tasteless and offers no true nutrition, and the soup relies on a whole concoction of other high-quality ingredients, consumers may be willing to choose this option for economic and environmental reasons.

\(^1\) Menu research
UNITED STATES POLICIES ON SHARK FINNING

For over a decade, the United States has enacted a series of laws to alleviate the pressures of shark finning on condrichthyan populations. The Shark Finning Prohibition Act of 2000 prohibits the practice of removing fin or fins, which may or may not include the caudal fin (i.e. tail) by any person under the U.S. jurisdiction (NOAA NMFS, 2010). Some oceanic and highly migratory species in federal waters, such as the thresher shark (*Alopias vulpinus*), are managed by the Magnuson-Stevens Fishery Management and Conservation Act under eight fishery management plans.

Despite these legislative efforts, the shark fin continues to be imported into and exported from the United States. On the 14th of February 2011, Assembly Bill 376 was introduced in the state of California, proposing to ban trade, sale, and possession of shark fin. This bill follows the enactment of a similar ban in Hawaii. Washington and Oregon are at various stages of passing bans, setting the stage for a domestic prohibition of shark fin in the United States. AB 376 was passed by the California State Assembly by a vote of 65 – 8 on 23 May 2011.

PURPOSE

This report summarizes the shark fin market in the United States based on studies from a consumer perspective. It will cover survey results and analyses from major Chinese communities in the cities of San Francisco, CA; Los Angeles, CA; New York, NY; and Rockville, MD.
Assessing the California Shark Fin Market: Restaurant Survey

One indicator of the shark fin market is the number of restaurants that offer shark fin dishes on their menus. The most common serving of shark fin is a soup, as a course served in banquets for weddings, New Years, and other special occasions. It is also available at select Chinese restaurants on lunch and/or dinner menus, or upon request.

In addition to identifying the distribution of California’s shark fin market, the survey of menu items shows how accessible this good is to consumers. Furthermore, the type of menu items and associated habits can reveal trends in consumption.

Objectives
The goal of the restaurant survey is to characterize the shark fin market in California. This portion of the project aims to reveal the:
1) Occurrence of shark fin in Chinese restaurants
2) Geographic distribution of shark fin restaurants
3) Types of shark fin dishes and availability

Key Findings for the State of California
- About 20% of Chinese restaurants offer shark fin dishes.
- 19.1% of Chinese restaurants offer real shark fin.
- 1.4% of Chinese restaurants offer imitation or vegetarian options.
- 2.0% of Chinese restaurants serve dim sum dumplings made with shark fin in addition to the soup, which equates to 10.8% of restaurants that vend shark fin. Dumplings are eaten more frequently than soup.
- Shark fin restaurants are regionally clustered. They occur densely around the cities of San Francisco, Los Angeles, and San Diego as the top three.
METHODS

A list of Chinese restaurants in California was obtained through the United Chinese Restaurant Association of America. Phone calls were conducted from December to January 2010 and March to April 2011, for a total time of two months. Fifteen volunteers from WildAid and the Humane Society of the United States, plus the primary investigator, conducted the surveys by phone calls. If a restaurant could not be reached, its menu was searched online using web sites that archived restaurant menus. We primarily used Menuism.com and Allmenus.com.

Each volunteer tracked his or her results with a Microsoft Excel spreadsheet, which was collected and compiled by the primary investigator. The following information was collected for each restaurant:

- Name
- Address: Street, City, State, Zip Code
- Phone number
- Menu items
  - Soup
  - Dim Sum
  - Imitation/vegetarian

RESULTS

Of the list provided by UCRAA, a total of 2,296 Chinese restaurants were successfully surveyed for the availability of shark fin dishes on their menu. Table 1 summarizes the number of restaurants and menu items.

- 471 restaurants were identified as providers of shark fin soup, which is 20.5% of the 2,296 surveyed.
- It must be noted that 33 (7.0%) of 471 restaurants serve imitation or vegetarian options.
- The number of restaurants vending real shark fin dishes is actually 438, or 19.1% of the surveyed Chinese restaurants.
- Of the restaurants that serve soup, 51 (10.8%) of the 471 shark fin restaurants offer shark fin-filled dumplings in addition to the soup.

<table>
<thead>
<tr>
<th>Table 1: Restaurants with Shark Fin on the Menu</th>
<th>Number of Restaurants</th>
<th>% of Total Restaurants Surveyed (out of 2,296)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of restaurants surveyed</td>
<td>2,296</td>
<td></td>
</tr>
<tr>
<td>Restaurants that serve shark fin soup</td>
<td>471</td>
<td>20.5%</td>
</tr>
<tr>
<td>Restaurants that serve soup made with real fin</td>
<td>438</td>
<td>19.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Types of Dishes</th>
<th>% of Restaurants w/ Soup (out of 471)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving soup with real fin</td>
<td>92.3%</td>
</tr>
<tr>
<td>Serving soup with imitation fin</td>
<td>7.0%</td>
</tr>
<tr>
<td>Dim Sum with real fin (in addition to soup)</td>
<td>10.8%</td>
</tr>
<tr>
<td>Dim Sum with imitation fin (in addition to soup)</td>
<td>0%</td>
</tr>
</tbody>
</table>
Regional Distribution

Restaurants that serve shark fin tend to be clustered in distribution. The three largest markets are located in San Francisco, Los Angeles, and San Diego. The map in Figure 1 illustrates the geographic distribution, while Tables 1 and 2 list the top counties and cities based on the number of restaurants that serve shark fin.

Figure 1: Relative distribution of restaurants in California that serve shark fin products.

Table 2: Top Ten Counties and Cities with Shark Fin Restaurants

<table>
<thead>
<tr>
<th>County</th>
<th>Number of Restaurants</th>
<th>City</th>
<th>Number of Restaurants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles</td>
<td>149</td>
<td>San Francisco</td>
<td>113</td>
</tr>
<tr>
<td>San Francisco</td>
<td>139</td>
<td>Los Angeles</td>
<td>38</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>73</td>
<td>San Diego</td>
<td>32</td>
</tr>
<tr>
<td>San Diego</td>
<td>37</td>
<td>Sacramento</td>
<td>22</td>
</tr>
<tr>
<td>Alameda</td>
<td>28</td>
<td>San Jose</td>
<td>21</td>
</tr>
<tr>
<td>Sacramento</td>
<td>25</td>
<td>Monterey Park</td>
<td>20</td>
</tr>
<tr>
<td>Orange</td>
<td>6</td>
<td>Oakland</td>
<td>14</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>4</td>
<td>Milpitas</td>
<td>14</td>
</tr>
<tr>
<td>Kern</td>
<td>2</td>
<td>Daly City</td>
<td>13</td>
</tr>
<tr>
<td>Fresno</td>
<td>2</td>
<td>Alhambra</td>
<td>10</td>
</tr>
</tbody>
</table>
Revealing Behaviors, Awareness, and Attitudes: Consumer Survey

There are common beliefs about shark fin consumption that are stated in most news article or campaign programs targeted at shark finning practices. The most prominent is that sharks are finned for an expensive soup served at wedding banquets. Another belief is that the older segment of the Chinese population, with stronger ties to traditional roots, is the primary consumers. Conversely, younger generations, who are more likely to be exposed to anti-finning awareness campaigns, would more likely be opposed to shark fin consumption.

The consumer survey was designed to shed light on consumption behaviors (habits), awareness and attitudes towards shark fin products. The following objectives directed the development of the survey questionnaire (Appendix A).

Objectives
1) CONSUMPTION: Identify how commonly shark fin eaten in the United States, and any patterns and trends in consumption among Chinese-American communities.
2) AWARENESS: Reveal consumer awareness about shark finning and utilization.
3) MOTIVATIONS: Identify main motivations behind shark fin consumption.
4) DEMOGRAPHICS: Identify significant demographic distinctions among consumers.
5) SUBSTITUTION: Reveal attitudes towards real and imitation shark fin.

Key Findings
- About half of Chinese people surveyed consume shark fin occasionally, once to a few times a year during special occasions.
- Consumers who eat shark fin products often or frequently consume both soup and dim sum dumplings.
- Younger age groups and first or greater generations make up a significant portion of consumers who eat shark fin often, and choose to eat shark fin despite being aware of finning issues.
- The primary motivation for consuming shark fin is taste, due to the wealth of other high-quality, non-fin ingredients used in shark fin soups and dishes.
RESEARCH METHODS

An in-person survey was the primary tool to investigate the questions surrounding shark fin consumption. The questionnaire (Appendix A) included questions about behaviors and habit, preferences, attitudes, and awareness towards shark fin products and finning issues. A survey was ideal because it provides a way to collect standard responses with comparable information at a minimum, while providing an opportunity to have conversations with consumers.

Characteristics of the Survey Questionnaire
The survey was completely voluntary, and in-person surveys were not offered any incentives or rewards for participation. Therefore, to increase participation rate, the survey was designed to be short, consisting of 12 questions plus demographic information, and requiring only one side of a standard sheet of copy paper. A translated version in Chinese was also available.

Survey Subjects
As most shark fin consumers are Chinese, surveys were conducted in cities that have large Chinese populations. The two cities of primary interest are San Francisco, California and New York, New York. According to the United States Census Bureau’s 2000 population report (the most recent for this data query), these two cities have two the highest populations of Chinese ethnicity. Surveys were also conducted in Los Angeles and San Diego of California, and Rockville and Gaithersburg of Maryland because opportunities to sample in these locations were available to the primary investigator.

Logistics
The primary investigator traveled to each of the sampled cities for a period of two to four days each in March and April of 2011. Surveys were conducted in and around Chinatown marketplaces, subways, and parks. The most common times occurred between noon and rush hour, when there was more foot traffic in these public places.

Survey Methods
Subjects were chosen as randomly as possible. However, the sampling may show demographic bias due to refusal of participation.

When communicating to the subjects, the primary investigator spoke in English or Cantonese, depending on the subject’s preferred language. Each interview took from 2 to 20 minutes, depending on the need to interpret and/or translate the questions and how conversational the subject was. Subjects have the option to answer the survey themselves if they wish, but the default will for the investigator to conduct the survey.

A purpose of the in-person survey was to open up dialogue with consumers. Comments provided during surveys were recorded as qualitative data to supplement survey responses.

Institutional Review Board
The Shark Fin Consumer Survey was approved by the University of California – San Diego’s Institutional Review Board. Since the survey does not collect personal information and is completely voluntary, subjects are not at risk of danger or boredom.
RESULTS

A total of 100 subjects were surveyed in total across cities. Table 3 lists the number of surveys conducted at each site, by state.

Table 3: Number of Subjects by Location

<table>
<thead>
<tr>
<th>State</th>
<th>City</th>
<th>Number Surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>San Francisco and Los Angeles</td>
<td>31</td>
</tr>
<tr>
<td>New York</td>
<td>New York and Queens</td>
<td>31</td>
</tr>
<tr>
<td>Maryland</td>
<td>Gaithersburg and Rockville</td>
<td>38</td>
</tr>
<tr>
<td><strong>Total Number Surveyed</strong></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

A majority of the subjects were female, at 66%. Although sampling was intended to be random, males more often declined to participate in the survey. The following charts illustrate the distribution of age, education, language, and generation for each gender.
Consumption of Shark Fin in the United States

The Consumer Survey collected information about each subject’s frequency of shark fin consumption, as well as the types of dishes he or she ate.

Figure 2 depicts the frequency of shark fin consumption based on the sample of 100 subjects from major Chinese communities in the United States. Overall:
- 20% of the sample do not consume shark fin at all.
- 52% of consumers eat shark fin occasionally, about once or twice a year. These tend to be consumed during banquets and special events.
- 24% of consumers claim to eat shark fin very often, from several times a year to once or more a month.

Habits
Taking a closer look at the consumption habits, Figure 3, the frequency of consumption was crossed with data on the types of shark fin products eaten. It is worthwhile to note that those who eat shark fin on a “not often” basis mainly consume soup. Subjects that eat shark fin often or frequently tend to consume both soup and dumpling options.

Age Differences
Figure 4 shows the relative age groups of consumers for each level of shark fin consumption. 80% of the subjects who never eat shark fin are 30 years or younger, with the remaining 20% being between 31 and 50 years old. Occasional consumers of fin are fairly evenly distributed among all age groups, averaging 33.3%, with a standard deviation of 5%. For those who frequently consume shark fin, 46% were aged 30 or younger.

Figure 2: How frequently shark fin is consumed in the United States

Figure 3: Frequency and Types of Shark Fin Consumed in the United States

Figure 4: Fin consumption by different age groups
Awareness of Shark Finning Issues

A question about shark utilization not only reveals awareness, but can also be used to assess whether an understanding of the sources and fishing practices influence consumption. Subjects were asked to answer the following question:

Please choose the statement that best reflects your knowledge or belief as to how shark fin is collected:
- a) The whole shark is used for fins and meat.
- b) Only the fins are used and the rest of the animal is thrown away.
- c) I'm not sure.

The expected answer based on common campaign materials is (b) “Only the fins are collected while the rest of the animal is not utilized.”

Figure 5a shows the total number of responses for each answer choice. The majority of subjects (43%) believed that only the fins are used, but not the rest of the animal. This is consistent with the statements commonly published by anti-shark finning campaigns. A similar number of subjects (39%) were not sure, while 18% believed that sharks meat is used as well as fins.

In Figure 5b, these results were cross-tabulated with demographic information about each subject’s generation status to determine if there was a generational difference in awareness. The bars indicate the percentage of generational responses for answer choice. The breakdown for the answer choices are as follows:
- a) Whole shark is used: 66.7% of the subjects who were not were immigrants to the United States. Conversely, only 33.3% of subjects were U.S.-born.
- b) Only fins are used: 74.4% of respondents were of first or greater generations in the U.S. 25.6% were immigrants.
- c) Not sure: 61.5% were U.S-born; 38.5% were immigrants.

Figures 5a and b: Consumer beliefs about shark fin collection practices and shark utilization.
Motivations for Shark Fin Consumption

An understanding of the motivations behind shark fin consumption can help inform strategies for curbing demand for this delicacy. The survey asked subjects to check all the reasons why they eat shark fin dishes. This question was asked only if the subject was a consumer of shark fin. A relevant question asked subjects to rate how tasty they considered the other ingredients used in shark fin soup (everything besides the shark fin.) The results are graphically presented in Figures 6 and 7.

**Why do you eat shark fin products? Please check all that apply.**
- Taste or texture
- Tradition or culture
- To show respect to family/friends
- Nutritional value

*Figure 6: The bar height represents the number of times each motivation was selected, coded by age.*

**Motivations**

**Taste and texture** is the primary motivation for shark fin consumption, at a count of 43. Of these, 23 (53.5%) are from consumers aged 18 – 30.

**Tradition** is the second most popular reason for consuming shark fin dishes, with a total of 20 responses and similar numbers of responses across age groups.

**Respect** is the third reason, with 10 (62.5%) of the 16 responses belonging to subjects aged 51 and over.

**Nutritional value** is the least common reason.

**Non-fin Soup Ingredients**

There is a strong agreement that the taste of the soup relies on other non-fin ingredients.
Preferences

Consumers were asked to rate their preference for imitation shark and the option to be able to eat shark fin dishes. The statement about imitation shark fin was intended to show willingness to choose a substitute for real shark fin, one that is sustainable and not harmful to sharks. The statement regarding the option to eat shark fin assesses consumers' agreement or opposition to a ban on trade, sale, and possession of shark fin in the United States. The responses are illustrated in Figure 8.

A neutral or indifferent rating would be 3.5, calculated as the mean of the ratings choices: 
\[(1+2+3+4+5+6)/6 = 3.5.\]

"I prefer imitation shark fin."
The average rating of preference for imitation shark fin was 3.55, only slightly higher than a neutral rating of 3.5. The average number of responses for each rating was 10. The standard deviation for the number of responses for each category was 2.76.

"I like to have the option to eat shark fin products."
The average rating for real shark fin was 3.76, which is 0.26 higher than the neutral rating of 3.5. The average number of responses for each rating was 12.2. The standard deviation for the number of responses for each category was 8.54.

Figure 8: Preferences for imitation and the option to eat shark fin.

<table>
<thead>
<tr>
<th>To what extent do you agree with each of the following statements?</th>
</tr>
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<tbody>
<tr>
<td>I prefer imitation/vegetarian shark fin to real shark fin.</td>
</tr>
<tr>
<td>I like to have the option to eat [real] shark fin products.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>□</td>
</tr>
</tbody>
</table>

Table 4: Demographics of the consumers who strongly prefer option to eat real shark fin.

<table>
<thead>
<tr>
<th>Age:</th>
<th>% of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 – 30</td>
<td>47.6</td>
</tr>
<tr>
<td>31 – 50</td>
<td>19.1</td>
</tr>
<tr>
<td>51+</td>
<td>33.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Generation</th>
<th>% of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrant</td>
<td>28.6</td>
</tr>
<tr>
<td>1+ Generations</td>
<td>71.4</td>
</tr>
</tbody>
</table>

Comparison of Preferences for Real Shark Fin Versus a Substitution

![Comparison chart](chart.png)
Attitudes toward Sharks and Shark Conservation

The Consumer Survey asked subjects to rate how they agree or disagree with three statements about sharks and their conservation. Responses reveal the attitudes towards sharks because it prompts subjects to consider sharks as living things. Comparisons of these responses to consumption, motivation, and preferences may reveal gaps in consumer understanding about sharks and finning issues. The results are graphically presented in Figure 9.

<table>
<thead>
<tr>
<th>To what extent do you agree with each of the following statements?</th>
<th>Disagree ←--------&gt; Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laws on fishing and trade can help save sharks.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>Sharks are important animals for the oceans.</td>
<td></td>
</tr>
<tr>
<td>Many shark species are threatened by fishing.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 9: Trend lines for consumer and non-consumer attitudes towards sharks and their conservation.

The ratings indicate that consumers believe that sharks are important and have confidence in laws being able to save threatened species. In conversations during surveys, some consumers have expressed that they can empathize and are willing to forego shark fin consumption because of the inhumane methods of finning. One consumer commented that eating shark fin was “not as bad as Japanese consumption of whales.”

\[2\] Comments from surveys, translated from Cantonese
Shark Fin Culture in the United States: Interpreting Results from the Surveys

To characterize the shark fin market in California, and the United States in general, two surveys were conducted from retailer and consumer perspectives. The first survey consisted of identifying the number of Chinese restaurants that serve shark fin, including data on real versus imitation/vegetarian shark fin, and the availability of dim sum made with shark fin as a filling. The second survey, a consumer study, gathered information about behaviors, awareness, motivations, and attitudes. Together, the results provide a profile of shark fin market in the United States during a time when legislative actions are progressing towards a movement to curb threats to global shark populations.

Based on a restaurant survey conducted for the state of California, 10.8% of Chinese restaurants serve shark fin dumplings or dim sum in addition to offering the soup. Although the percentage of restaurants serving both soup and dumplings are low, the fact that dim sum is eaten more often than soup raises the concern that shark fin may become an everyday consumable for some people.

A sample size of 100 subjects was surveyed in California, New York, and Maryland, where large populations of Chinese live. Through quantitative and qualitative responses, common beliefs about shark fin consumption can be supported, or new trends revealed. The following section discusses the research findings in context.
Consumption

Based on 100 subjects surveyed, about half of the subjects consume shark fin occasionally, which equates to once to a few times a year. These tend to be special occasions such as wedding, New Year, and other celebratory events. 20% responded that they never eat shark fin, while 24% answered that they consume it often or frequently. These consumers tend to eat dim sum dumplings made with shark fin in addition to having the soup. While this study did not capture quantitative data about actual consumption, it can be inferred that the servings of shark fin as dim sum dumplings may indicate a trend towards more commonplace consumption, beyond the occasional event.

Younger age groups and first or greater generations make up a significant portion of consumers who eat shark fin often, and choose to eat shark fin despite being aware of finning issues. When considering the motivations behind consumption by this younger group, who are expected to consume less, it was found that the primary reason for consuming shark fin was taste. Although shark fin is naturally tasteless, the soup and dishes are desirable due to the wealth of other high-quality, non-fin ingredients used in shark fin soups and dishes.

Awareness of Finning Practices

With 18% of consumers that assuming that whole sharks are used and 39% uncertain about shark utilization, there appears to be an overwhelming lack of understanding awareness about shark fin collection. One explanation could be that anti-shark fin campaigns are not reaching certain consumers. However, this survey did not ask subjects about their exposure to outreach and advocacy materials.

A Shift in Shark Utilization?

Comments from subjects indicate that shark finning practices may actually be shifting towards less wasteful utilization of sharks. Consumers who purchase dried shark fin from retail stores to prepare at home have shared that the “fin needles” from gills and stomach parts are available and more affordable. For example, cartilaginous threads from the stomach area are marketed as “golden needles” and cost approximately $80 per pound\(^3\). Consumers have commented that this price is more affordable than fin needles. Further discussion on the topic of non-fin parts of sharks being used as a source of needles reveals that consumers have noticed that “you cannot buy nice, high quality fins anymore.” However, there appears to be a missed connection between this observation and awareness of the general decline in global shark populations.

In addition to surveying consumers, the primary investigator also visited stores where shark fin is accessible to the public. Shark fin is usually sold at herbal emporiums more widely known to vend ginseng and other dried goods used in traditional medicine. In addition to dried fins, it was observed that shark “bone” – which is cartilaginous in composition – from vertebrae and fins are sold and marketed as health-boosting supplements.

\(^3\) Survey subject commentary
Further studies are worthwhile to investigate which species of sharks are used to provide non-fin needles. For example, fin bones observed in a grocery store in Monterey Park, California were identified as the pectoral fin of a thresher shark (Cano-Stocco, 2011), a federally managed species in the United States with a commercial market for its meat.

"Bones" from shark fin marketed as a healthy ingredient for soup. These fins were identified as pectoral fins from thresher sharks.
Motivations for the Consumption of Shark Fin Soup

Taste and texture was found to be the dominant reason for eating shark fin soup. Ironically, shark fin is tasteless and has a soft, chewy texture since it is composed of cartilage. However, this luxury item often accompanied with other high-quality and expensive ingredients, such as dried scallops, crab meat, and fish maw. Recipes often call for advanced culinary skills, which enhances the exquisite appeal of the soup and dishes⁴. Consumer ratings of the non-fin ingredients in shark fin soup indicate that consumers recognize that the taste of shark fin soup relies on other ingredients.

Nutrition is the least common reason for consuming shark fin dishes, despite some traditional claims that shark fin can enhance health and skin quality. This indicates that consumers have been educated about the true nutritional and chemical composition of shark fin. It is predominantly calcium (32%), phosphorous (42%), and protein (18%) (FAO, 1997).

Preferences

Preferences for imitation shark fin and the option to eat shark fin was revealed by consumer ratings. Generally, consumer attitude towards imitation shark fin was nearly indifferent, and the number of subjects at each level of preference, from favoring to opposing, was pretty consistent based on the low standard deviation.

Consumers expressed strong preferences for the option to eat shark fin products. The number of responses diverged in two camps. One group strongly opposed the option, which can be interpreted as favoring of legislation that bans trade, sale, and possession of shark fin. The other group of consumers strongly agreed that they want the option to eat shark fin.

Further analysis identified that a majority of consumers who strongly prefer an option to eat shark fin belong to the younger age class and are first generation or greater in the United States. These same individuals have responded that taste and texture is the dominant reason for consuming shark fin dishes.

⁴ Comments from consumer surveys
Substitution

Substitution can serve to distract consumers from an overexploited natural resource. For example, people who enjoyed North Atlantic cod had other options for fish that helped to alleviate strains on cod fisheries (Keohane, 2007). The potential substitute for shark fin, known as imitation or vegetarian shark fin, is made of mung bean and is actually a variation of “cellophane” noodles, so named because the thin noodles are transparent and elastic when cooked. There is another variety of imitation shark fin made of pork gelatin, manufactured in Japan. Like the real thing, these substitutes have very little to no taste itself and rely on the concoction of other quality ingredients to give it an exquisite flavor. Due to the resemblance to shark fin threads but very cheap cost, use of imitation shark fin may be preferred by some consumers.

Imitation shark fin may play a role in replacing, or at least alleviate regional demand for real shark fin until shark populations can recover and become sustainable. The survey results reveal that consumers are primarily motivated to eat shark fin dishes for taste and texture, and that shark fin soup is made of many other tasty ingredients. Meanwhile, attitudes towards imitation shark fin were fairly neutral, only slightly skewed towards a favorable preference. It is worthwhile to promote imitation and vegetarian – or “shark-friendly shark fin,” for example.

Ecolabeling as Potential Marketing Tool to Curb Shark Fin Demand

The use of dolphin-safe labels and other environmental certifications have been shown to guide consumer behavior that resulted in market-based corrections in fisheries practices (Teisl, 2001). Consumers are increasingly aware and conscious of environmental issues, and generally do attempt to make “green” choices, as revealed in willingness to pay more for organic and environmentally friendly products. In the context of shark fin consumption, ecolabeling will be used to transform and strengthen attitudes to favor imitation shark fin – or “shark-safe shark fin” through positive promotion of its benefits. Some consumers have commented that if shark finning is inhumane, they are willing to stop eating shark fin. Empathy appeals to the Chinese culture, and should be emphasized in marketing materials to increase effectiveness in delivering messages.

Ideally, ecolabeling would be instrumented with an educational and marketing campaign that teaches consumers about the threats to sharks and potential health risks associated with eating shark fins. At the same time, there should be persistent reminders that shark fin soup depends on a suite of ingredients for flavor and richness, not just fin. The campaign can also award restaurants that serve vegetarian or shark-safe shark fin.

\[3\] Comments from consumer surveys
Shark Fin Culture in the United States:
Conclusion

The results from the restaurant and consumer surveys provide a characterization of the shark fin market in the United States, with focus on the state of California. About 20% of Chinese restaurants offer shark fin on its menu. About 19% serves real shark fin, while a minority provides imitation or vegetarian alternatives. Some interesting consumption trends are revealed, notably that shark fin is used as an ingredient in dim sum dumplings in addition to soup. The more casual and more frequent tradition of dim sum suggests that shark fin consumption may become more commonplace. Further study of the actual consumption rate by quantitative methods is needed to confirm this hypothesis.

It was also revealed that a portion of younger consumers, who are of first or greater generations in the United States, and have awareness of shark finning issues, are choosing to eat shark fin products. The predominant reason for consumption was for taste and texture, not necessarily for the shark fin itself, but because the soup and other shark fin dishes are considered a luxury item and is composed of a wealth of other high-quality and tasty ingredients. Since preference for imitation shark fin is nearly neutral and many consumers recognize the fact that the soup relies on other non-fin ingredients, it may be worthwhile to promote the use of imitation and vegetarian shark fin as a substitute.

These findings show that some consumer behaviors are not affected by education. The challenges of curbing shark fin demand in the United States and globally would require a holistic approach, with continued education and also a strengthening of policies and regulation. Marketing tools may further enhance the effectiveness of behavioral change.
REFERENCES


RELEVANT LEGISLATION


Magnuson-Stevens Fishery Conservation and Management Act
http://www.nmfs.noaa.gov/sfa/magact/

Assembly Bill 376
http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_0351-0400/ab_376_bill_20110214_introduced.pdf

PHOTO CREDITS

All photos by Melissa Yuen
Appendix A

Survey B.1: Shark Fin Consumption & Preferences

Disclaimer: This survey is a school project study on shark fin products and is only intended to collect information on consumption and preferences. Personal information will not be published or distributed.

1. Do you eat shark fin products?
   □ Never
   □ Only imitation/vegetarian shark fin
   □ Not often (once to a couple times a year, special occasions)
   □ Often (several times a year)
   □ Frequently (once or more a month)

2. Please choose the box that best reflects your knowledge, or belief, as to how shark fin collected?
   □ The whole shark is used for fins and meat.
   □ Only the fins are used and the rest of the animal is thrown away.
   □ I’m not sure.

3. What kind of shark fin products do you eat? Check all that apply:
   □ Soup
   □ Dumplings/Dim Sum
   □ Baked goods
   □ Other: ________________

4. Do you eat at a restaurant or cook it at home? Check all that apply.
   □ Restaurant
   □ Buy at store and cook at home
   □ At a function or event
   □ Other: ________________

5. Why do you eat shark fin products? Please check all that apply.
   □ Taste or texture
   □ Tradition or culture
   □ To show respect to family/friends
   □ Nutritional value

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To what extent do you agree with each of the following statements?

<table>
<thead>
<tr>
<th></th>
<th>Disagree ←--------→ Strongly Agree</th>
</tr>
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<tbody>
<tr>
<td>6.</td>
<td>Laws on fishing and trade can help save sharks.</td>
</tr>
<tr>
<td>7.</td>
<td>Sharks are important animals for the oceans.</td>
</tr>
<tr>
<td>8.</td>
<td>Shark fins can be high in mercury.</td>
</tr>
<tr>
<td>9.</td>
<td>Many shark species are threatened by fishing.</td>
</tr>
<tr>
<td>10.</td>
<td>Shark fin soup is made of lots of tasty ingredients.</td>
</tr>
<tr>
<td>11.</td>
<td>I prefer imitation/vegetarian shark fin to real shark fin.</td>
</tr>
<tr>
<td>12.</td>
<td>I like to have the option to eat shark fin products.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>CA Resident</th>
<th>Zip Code</th>
<th>Gender</th>
<th>Age</th>
<th>Education</th>
<th>Generation</th>
<th>Language</th>
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<td>□ 51+</td>
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THANK YOU! 😊