

# CONSERVATION OR CULTURE? AN ANALYSIS OF SHARK FINNING IN THE UNITED STATES

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## Abstract

Each year, more than 73 million sharks are killed for their fins. In response to declining populations, the United States, has passed federal regulations to ban the finning of sharks within the U.S. Exclusive Economic Zone. Many states have taken the ban further to restrict the, sale, trade, possession and distribution of fins. While many legislators, politicians and conservationists believe these bans will protect shark species, others believe that it discriminates against the ancient traditions of serving shark fin soup. This project analyzes shark fin soup consumption and its significance in Chinese culture. It then examines the status of shark populations, shark fin as an economic driver and current international management to explain the importance of shark conservation. As the U.S. is the eighth largest shark finning country in the world, federal and state regulations on shark finning is reviewed to provide a legal basis for the practice in question. Opinions of U.S. citizens on shark finning and cultural traditions are shared as this is the foundation for why this project was chosen. An ethnographic pilot survey disseminated to Chinese, Hong Kongese and Taiwanese Americans in San Francisco, CA, New York, NY and Washington, D.C. offers evidence towards understanding the importance of shark fin in the modern day cultural practices. Survey results found that many respondents hold similar opinions about decreasing shark fin soup consumption. Out of the 77 surveys, 39% of respondents have significantly decreased their consumption. The highest response for the reduction in consumption was for environmental reasons. Additionally, many respondents believe that serving shark fin soup is not as important to them as it is for their family. These results and their comments indicate that this tradition may be diminishing. Opinions from survey material, publications, and personal communication are correlated with peer reviewed science in order to provide policy recommendations. Suggestions for the most appropriate policy alternatives are offered with the desire to come to a nexus of feasible regulation, effective management and cultural acceptance.

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## Introduction

Shark removal and exploitation has increased globally due to China's economic growth and the subsequent demand for shark fin soup around the world (Myers et al. 2007). Shark finning, one of the major exploitative practices of this species, refers to cutting the fins off of the shark carcass and using the fins as the main ingredient in shark fin soup or for Chinese medicinal practices. When the fins are cut off, the shark, whether dead or alive, is commonly discarded back into the water. The entire carcass is not needed as shark meat is not as profitable as the fin. Shark fins, which make up about five percent of the mass of the shark, can reach prices of over \$300/lb, making this consumptive item one of the highest priced food sources in the world (Pew Environment Group 2011). A 2000 study of the fin trade in Hong Kong suggests that more than 73 million sharks are finned each year, but scientists estimate that the numbers actually reach over 100 million (Pew Environment Group 2011). Sharks are extremely vulnerable to overexploitation as their life history characteristics include slow growth rates and have low reproductive levels (Lack and Sant 2011). According to The International Union for Conservation of Nature (IUCN) Red List, over 30% of shark populations are listed as threatened or near threatened (Pew Environment Group 2011). Other shark species stocks or populations have yet to be determined due to the lack of reported data (Anon. 2013). Sharks are vital apex predators that regulate the prey beneath them and their removal has a cascading impact on the ecosystem and other marine species, some of which we will not be able to predict (Ramsay 2011).

Shark fin soup consumption is one of the leading causes of global shark decline. Shark fin soup, "yu chi" in Chinese, which is translated to "fish wing" in English, is a luxury dish that embodies traditions from Eastern Asia. Recipes date back to over two thousand years during the Ming Dynasty when the soup was served to emperors (Ramsay 2011) during formal banquets (Buckley and Hile 2007). It was favored by emperors for its rarity, giving the soup the allure and its subsequent high demand (Ramsay 2011). The soup originated in southern China and has become popular throughout the world (Buckley and Hile 2007), including in the United States.

Finning occurs not only near the heart of shark fin soup consumption off the coasts of China, but all over the world, including in United States waters. The U.S. is ranked eighth in the top 20 "shark catchers" in the world (Lack and Sant 2011). From 1991 to 1998 alone, shark fishing in U.S. Pacific longline fisheries increased from three percent to 60% total catch (NOAA 2002). Drastic increases in shark fishing and the recognition of deteriorating shark populations has resulted in the creation of federal regulations to reduce commercial finning practices. The original federal regulations were mandated in 2000 through the Shark Finning Prohibition Act of 2000 (Public Law 106-557), and were

amended in the Shark Conservation Act of 2010 (H.R. 81, S.850) to close loopholes and require all sharks to be landed whole. In addition, many states have stiffened existing federal law by forbidding the sale, trade, possession and distribution of shark fins. Many citizens consider this law as a way to stop cruel and inhumane treatment of sharks, while for others, it is a discriminatory law that insults cultural practices dating back over 2000 years.

## Objectives

This project analyzes shark fin soup consumption and its significance in Chinese culture. It then examines the status of shark populations, shark fin as an economic driver and current international management to explain the importance of shark conservation. As the U.S. is the eighth largest shark finning country in the world, it is necessary to review federal and state regulations on shark finning to provide a legal basis for the practice in question. Opinions of U.S. citizens on shark finning and cultural traditions are shared as this is the foundation for why this project was chosen. Based off of these opinions, an ethnographic pilot survey was created and disseminated to Chinese, Hong Kongese and Taiwanese Americans<sup>1</sup> in San Francisco, CA, New York, NY and Washington, D.C. and surrounding regions. Opinions from survey material, publications and personal communication are correlated with peer reviewed science in order to provide policy recommendations. Recommendations for the most appropriate policy alternatives are given in the desire to come to a proper nexus of regulation, management and cultural acceptance.

## Background

### Shark Fin as a Tradition

The historical sequence of events that lead China to the popularization of luxury seafood items is vital to understanding their significance in contemporary Chinese cuisine. A soup once favored by Chinese emperors is served today as a status of honor, wealth and prosperity. Fins first appeared as a delicacy in Chinese cuisine thousands of years ago during the Song Dynasty (960-1279 AD) (Fabinyi 2012). While trade by sea between China and Southeast Asian countries originated during the Song Dynasty, the privatization of trade and the creation of tax regulations in the Ming dynasty is where trade increased in food items such as pineapple, sugar and betel palm (Wu and Chung 2002) as well as

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<sup>1</sup> For the rest of the paper, Chinese, Hong Kongese and Taiwanese will be stated as “Chinese”.

extravagant items like bird's nest and sharks fin (Junru 2004). Shark fin soup as a luxury food item was established during the Ming Dynasty (1368-1644 AD) when it was served during banquets for emperors (Fabinyi 2012), and since the Qing Dynasty (1644-1911 AD) these items were only considered for the wealthy (Junru 2004). During Mao Tse Tung's tenure as leader of the Communist Party of the People's Republic of China (1945-1976), the soup was discouraged as an elitist practice (Buckley and Hile 2007). The soup was reintroduced in the late 80's during the Chinese economic reforms and the resulting increase in the wealthy population, causing a drastic rise in shark finning (Buckley and Hile 2007; Fabinyi 2012).

The spread of the use of shark fin as a food item can also be attributed to the popularization of southern or Cantonese regional cuisine from the Guangdong and Fujian provinces, where the origin of the trade and the use of marine life as a food source began (Fabinyi 2012). Shark fin consumption occurred chiefly in these southern provinces, as well as in cities such as Shanghai, Hong Kong and Beijing until the mid '90s (Fabinyi 2012). Southern regional cooking came to be popularized because this was the center of China's international trade industry during the Qing dynasty (Fabinyi 2012). The rise of Guangdong and Hong Kong as economic epicenters further proliferated the popularization and status of the cuisine (Fabinyi 2012).

### **Cultural and Traditional Understanding**

While history plays a part in understanding the popularization of sophisticated seafood cuisine, cultural elements solidify their importance in Chinese tradition. "To ordinary people, food is a tantamount to heaven" (Liao 2006). This ancient Chinese saying reflects the importance of how food has influenced Chinese culture over time. The incorporation of food culture into everyday activities also exist, as when walking down a street, a frequent greeting is "have you eaten?," not "how are you?" Food is not just a considered a source of sustenance, but is the sign of good health. The use of food and herbs in medicinal practices dates back to ancient times when, Shennong, the god of agriculture taught people how to grow crops and was also the master of medicine (Junru 2004). The bond between food and medicine is still held today in Chinese culture, as medical treatment and diet are closely linked (Junru 2004). Different foods have distinct influences and are used as therapy to restore the body. Pears help the lungs, while kiwis help the liver (Junru 2004). Sweet foods help the spleen and bitter foods help the heart (Junru 2004). Rare and exotic foods such as abalone, shark fin and white fungus are also used for medicinal purposes and promote good health (Newman 2004). Some foods are eaten seasonally. In the summer, foods are eaten to protect the body from humidity, and in the winter to keep the body warm (Junru 2004). Others are eaten at a certain age: high energy foods are needed for the elderly that

have “age-defying” properties such as poultry and fish (Junru 2004). While the bond between food and health is strong in Chinese culture, so is the symbolism that it embodies during meals.

Food types in Chinese culture have acquired cultural symbols and meanings. The symbolic importance of food is so meaningful, that some legends say that Confucius divorced his wife due to her poor cooking abilities (Junru 2004). The consumption of foreign food items, from other regions or countries, exemplifies the Chinese belief to rank foreign import and exotic foods as the highest of refined ingredients (Wu and Chung 2002). When a food is considered exotic and wild, it is also considered “unpolluted, special and precious”, giving the food an emotional motivation for consumption (Anon 2010). Other emotional and symbolic foods include tangerines, which symbolize “good luck” while the length of noodles served during a birthday celebration symbolizes longevity (Liao 2006). The use of fish in meals means that a person will have great happiness, fortune (Liao 2006) and prosperity (Fabinyi 2012). In fact, the Chinese, the word for ‘abundance’ is a homonym for the word ‘fish’ (Fabinyi 2012). When one hears ‘nian nian you yu’, a commonly used Chinese New Year greeting, it means ‘have abundance every year’. But as ‘yu’ also refers to fish, the giving of fish or the consumption of fish in New Year celebrations is common (Fabinyi 2012). This is why shark fin soup or ‘yu chi’ may be consumed at New Year celebrations. These symbolic meanings and the association of foods used for health benefits are some of the many reasons why food is so deep seeded in Chinese cultural activities.

## **Preparation**

The difficulty in preparation and the length of time taken to prepare certain foods also represent its uniqueness and allure in Chinese culture. Shark fins are not branded for consumption, so they are assessed by their thickness, length, fin needle texture, and color (Ramsay 2011; Clarke et al. 2007). Short fin mako and hammerhead lower caudal fins have been known to have the best quality fin needles (Clarke et al. 2007). Consumers will also take special care to confirm the amount of authentic shark fin in the soup (Clarke et al. 2007). Imitation shark fin is made out of mung bean extract which can be mixed with real shark fin in certain parts of Southeast Asia or Japan, as long as the soup contains 10% of the real product (Clarke et al. 2007). However, traditional Chinese societies oppose the use of artificial shark fin (Clarke et al. 2007). Shark fin is steamed, soaked and washed for days and left in a stock until the texture is gelatinous (Ramsay 2011). The fin portion of the soup is cut into long thin pieces and added to the soup where it is cooked for eight to ten hours, to give it texture (Mahr 2010). The flavor of shark fin soup comes mostly from the broth and spices that are mixed in with the other ingredients, as the fin does not have a distinct taste (Mahr 2010).



## **Economic Increase**

China's rapid economic expansion in the 1980's and 1990's shifted many of its citizens to a wealthier economic class and has widened the gap between the rich and the poor (Fabinyi 2012). Due to higher levels of food consumption, it is predicted that China will consume over 60 million tons of seafood by 2015, and import \$20 billion in seafood by the end of the decade (Chiun-Wei and Mohindru 2012). China is one of the leading markets for luxury exotic seafood such as sea cucumbers, shark fin and reef fish (Fabinyi 2012). From 1990 to 2007, the proportion of spending in urban households in China on "aquatic products" has risen from 1% to 4% (Fabinyi 2012). The movement towards consumption of high priced, lavish seafood is also a way to flaunt disposable income, or as a way that people of a lower class can identify with high society (Wu and Cheung 2002). As many people quickly moved into a wealthier economic class, flashing one's wealth through expensive meals became increasingly common. Consumption is also an expression of 'economic power' in a country with rapid economic growth (Fabinyi 2012). This class identity paradigm occurs in many cultures, and has been studied extensively in anthropology (Fabinyi 2012). The globalization of high class Chinese cuisine has spread the use of luxury seafood goods to metropolitan cities and other countries (Wu and Cheung 2002), providing those of higher status with a new type of indulgence. This dispersal and appeal has diversified the types of food eaten by those who do not have cultural ties to the luxury food items, as well as reinforced personal motivations to maintain these cultural ties as a migrant.

## **Immigration and Tradition**

Due to globalization, many people have relocated to other countries for jobs or other opportunities, bringing with them their cultural identity. Anthropologists' Basch, Glick Schiller, and Blanc-Szanton provide a theory of 'transnationalism', which encompasses the notion of immigrants forging the societies of both past and present (Viruell-Fuentes 2006). Immigrants 'borrow, blend and rediscover' culture when they move to a new location and decide which 'cultural tools' they would like to keep and which they would like to discard (Nagel 1994). As food culture is a vital part of Chinese tradition, it is most likely one of the 'cultural tools' that was brought to America. The symbolic use of food during celebrations and holidays is common among Chinese immigrants, whether newly arrived or several generations old. Shark fin soup is a prime example of a luxury food item whose symbolism and use has been brought to other countries, but has caused a rapid and severe decline in shark species.

## Shark Population Analysis

Elasmobranchs have been a leading apex predator in our oceans since the Devonian period over 400 million years ago (Techera and Klein 2011). They have survived four global mass extinctions while 80% of our planet's megafauna were victims of the earth's destruction (Pelagic Shark Research Foundation, n.d.). Their diversification through the Cretaceous period and beyond has resulted in over 400 species in the class Chondrichthyes, which includes skates and rays (Techera and Klein 2011). Through their remarkable survival and adaptation, sharks have developed specific features that have helped them to maintain their status as an apex predator. (Pelagic Shark Research Foundation, n.d.). Sharks have developed into fast-swimming predators with sleek bodies and rows of razor sharp teeth. They have an innate ability to locate and capture prey by smell and electrical signals from muscle movements (Brunner, n.d.). Sharks recover from injuries rapidly and are resistant to disease, infection and cancer (Pelagic Shark Research Foundation, n.d.). Shark species range over the entire ocean system, from the shallows to the deep, as pelagic or benthic dwellers (Techera and Klein 2011). They play a key role in our ocean ecosystem as the scavenger, preying on the sick, weak and the slow (Techera and Klein 2011). As an important predator, the decline of their populations will have fundamentally devastating effects on our ecosystem, damaging its stability (Techera and Klein 2011). The decline of shark species can potentially release mesopredator prey populations, causing trophic cascade effects on marine species (Myers et al. 2007; Heithaus et al. 2008). While sharks may seem indestructible as a result of their size and disposition, their populations are drastically declining due to anthropogenic impacts.

The majority of shark species exhibit life-history traits such as slow growth rates and low reproductive rates (Anon. 2013). Pelagic sharks' average maturity rate is around 11 years and can have life spans of around 65 years (Dulvy et al. 2008). Their gestation period usually lasts from nine to 18 months, and they only produce a few young (Dulvy et al. 2008). Unlike other fish, sharks have not adapted to high natural mortality rates as many fish have, due to their status as a top level predator (Clarke et al. 2007). This is why shark species are vulnerable to overexploitation and population stocks can take a long time to recover (Anon. 2013).

## Population Status

While sharks can be affected by environmental degradation such as habitat loss, marine pollution and climate change like any other marine species; their population status is predominantly declining by overfishing and bycatch (Ward-Paige et al. 2012). Targeted commercial shark fisheries since the mid-1980's (Buckley and Hile 2007) have intensified dramatically over the years due to the increase

in demand for shark fins (Ward-Paige et al. 2012). Between 1950 and 2004, sharks catches have increased from 270,000 to over 810,000 tons, an increase of almost 300% (Buckley and Hile 2007). Many sharks are frequently caught in longline, purse seine, gillnet, and mid-water trawl commercial fisheries that usually target other large pelagic species such as billfish and tuna (Dulvy et al. 2008). Though this is not their target species, many of these commercial fishermen will bring the sharks on board to be finned so they can make extra money on the side. Fisheries managers nationally and internationally regard sharks as a form of bycatch, rather than as a target commercial species (Clarke et al. 2012). This may be one of the many reasons why sharks do not take precedent as a target species requiring management, despite the fact that it is well known that sharks are targeted for their fins (Clarke et al. 2012). As their fins are worth more than their meat, it is more economically rational for commercial fishermen to fin the sharks and discard the carcass (Dulvy et al. 2008). Bycatch data for sharks has historically been inadequately recorded in fisheries reports as their catch is usually incidental (Dulvy et al. 2008). For instance, only 15% of all shark bycatch and catch data reported to the Food and Agriculture Organization of the United Nations (FAO) are recorded by species (Dulvy et al. 2008). There are few fisheries management plans for sharks and for those management plans that are in place, there is either a lack of data or the data is insufficient (Davis and Worm 2013). It is challenging to acquire total mortality estimates for shark species from fisheries (Davis and Worm 2013).

Many researchers have published findings of specific species decline which bring shark finning into perspective. U.S. Atlantic coast shark target surveys from 1972-2005 exhibit drastic declines in larger shark species (Myers et al. 2007). There was a 93% decrease in blacktip sharks, a 97% decrease in tiger sharks, 87% for sandbar sharks, 98% for scalloped hammerhead, and a 99% decrease for bull sharks (Myers et al. 2007). Additionally, there have been findings of declining and listed shark species' fins in markets. Clarke et al.'s (2006) research of the Hong Kong fin market discovered that of the 45% of the sharks identified, 70% were pelagic species. It is known that blue sharks are the most frequently caught shark and found most abundantly in the Hong Kong shark fin market at 17% over the market and 10.7 million sharks (Dulvy et al. 2008). The blue shark is also one of the most extensively researched sharks, but due to its large geographic range and poor catch data, the true global status has not been determined (Dulvy et al. 2008). Despite this, the Convention on International Trade in Endangered Species (CITES) has listed the shark as near threatened (Buckley and Hile 2007). One will also find the fins of CITES listed species such as great white, basking and whale sharks traded in markets (Buckley and Hile 2007). Other frequently finned species include hammerhead (threatened), shortfin mako (threatened), silky (near threatened), sandbar (threatened), bull (near threatened), and thresher

(threatened) sharks and represent around 2–6% of the market (Buckley and Hile 2007). These fins are commonly mislabeled and mixed in with the fins of other sharks, making it challenging to distinguish the species (Buckley and Hile 2007).

As of 2012, 67 species of elasmobranchs (sharks, rays and skates) have been labeled critically endangered or endangered by the IUCN (Ward-Paige et al. 2012). As a response to the fin trade, many sharks have been listed in Appendix I, II and III under CITES, including whale sharks, great whites, and basking sharks and recently hammerhead species, oceanic whitetips and porbeagle sharks (CITESb 2013). By 2008, 19 countries and the European Union had banned finning (Dulvy et al. 2008) including South Africa, Costa Rica, the European Union, Brazil, and the U.S. Other countries such as Venezuela have established bans after 2008. Nine other countries have implemented shark management regulations since 2008 (Dulvy et al. 2008) and participate in regional fisheries management organizations (RFMO's) (Clarke et al. 2007). Nonetheless, many sharks are continually taken for their fins each year. The numbers of deaths are unknown and most national waters and high seas are still unregulated (Clarke et al. 2007). An estimated 38 million sharks and 1.7 million tons of biomass (fins) enter the fin trade annually (Clarke et al. 2007). When converting this number to the total biomass of sharks, the amount of sharks killed is three to four times higher than FAO's shark catch statistics (Clarke et al. 2007). These numbers represent the Hong Kong fish market, which may not take into account mainland China's Singapore's and any other fish market's trade. What is clear from this investigation is that we have incomplete data on these species (Techera and Klein 2011). Consistent and accurate data will need to be established to fully comprehend the significant removal and decline of shark species for fins. Prior, during and after the removal of shark fin soup in China during Deng Xiaoping's presence as a leader of the People's Republic of China would have been a good indicator of shark population status, but unfortunately shark population research prior to the 1970's was scarce and relating this matter to present populations has not been heavily analyzed.

### **Economic Analysis**

While it is understood that tradition, culture, and wealth in Chinese society drive the shark fin trade, traders commonly refer to short-term economic gain as the most important influence on business (Clarke 2004). Just as Hong Kong was a major importer and exporter in the global ivory trade, it has also established itself this way in the shark fin trade (Buckley and Hile 2007). By the late 1980's, the Chinese government relaxed its stance on shark fin soup as a symbol of wealth, paving the way for a new market (Buckley and Hile 2007). Economic development provided people with more disposable income, thus the increase in demand for trade in fins (Clarke et al. 2007). Assessment of the international shark fin trade

determined that 50% of shark fins pass through Hong Kong, and the Hong Kong fin trade has increased by 6% each year (Buckley and Hile 2007). By 2003, Hong Kong was importing over 6,900 tons, or between \$440 and 550 million a year of shark fins (Anon 2006; Clarke et al. 2007). In 2008, 87 countries and regions imported almost 10 million kg of shark fins to Hong Kong, with top exports from Spain, Singapore, and Taiwan (Anon. 2010a).

Since data is not available on the volume of shark fin sales, national customs data are used to estimate the quantity and demand of the fin market (Clarke et al. 2007). It is believed that many of the fins exported from the U.S. to Hong Kong, and to a lesser extent China, New Zealand, and Singapore are then imported back to the U.S. for consumption (SAFE Report 2011; Anon. 2011). Imports usually come through one of five U.S. Customs and Boarder Protection areas: Anchorage, Los Angeles, San Francisco, Miami or Seattle (Anon. 2011). Exports of shark fins from the U.S. prior to the Shark Finning Prohibition Act of 2000 (SFPA) were around \$10/kg, and once the Act was enforced, the number of fins decreased drastically, but the price skyrocketed (SAFE Report 2011). From 2000 to 2003 alone, shark fins decreased from 365 million tons to 45 million tons and the price went from \$9.62/kg to \$87.79/kg respectively (SAFE Report 2011). As of 2010, exports were reaching \$80.28/kg with only 36 million tons being exported that year (SAFE Report 2011). In 2010, the US imported 34 million tons of shark fins costing \$1.18 million dollars (SAFE Report 2011). While exports are decreasing due to stricter regulations, the price is still high enough to drive commercial fishermen to land sharks (SAFE Report 2011). Other fishermen resort to illegal fishing in order to land more fins and increase their profit (SAFE Report 2011). Many U.S. distributors, grocers and restaurants are importing the fins to sell in the Asian food market or as soup in restaurants. Some have resorted to importing and selling the fins and soup illegally due to the high price they can fetch for the fins.

### **Current Management**

Current management strategies are present nationally and internationally for sharks. Below is a listing of a few of the major international shark management organizations. International management strategies include the listing of species through numerous international trade and conservation organizations. CITES provides a listing of species as means for countries to regulate threatened and endangered species international trade (CITESa, n.d.). Those countries who are a party to CITES have a chance to vote for species to be listed in one of three appendices: Appendix I listed species threatened with extinction, Appendix II lists species in which trade regulations must be recognized and Appendix III lists species in which individual countries can list species of concern with the possibility of trade controls between countries (CITESa, n.d.). Species of sharks are found on all three Appendices. The Conservation

of Migratory Species of Wild Animals (CMS) follows a similar approach to the listing of species under CITES. Listing under Appendix I prohibits member states from taking those species (CMS, n.d.). Listing under Appendix II requires member states to enter into agreements on the management of the species (CMS, n.d.). Sharks species are listed under both Appendices. The IUCN assesses the status of flora and fauna extinction through their Red List (IUCN, n.d.). The IUCN evaluates species to determine their extinction risk through five criteria and then will determine if the species is Threatened, Near threatened, Least Concern, or data deficient (IUCN, n.d.). Thus far, the IUCN has analyzed 1,045 shark and ray species and have determined that 30% are in the Threatened or Near Threatened category (The Pew Environment Group 2011).

The United Nations FAO also provides statistics on the trade and consumption of different food products, which include shark. In 1999, they produced an 'International Plan of Action for the Conservation and Management of Sharks' (IPOA-Sharks) to bring conservation, management and the sustainable use of sharks to the forefront of international fisheries (FAO 2012). This plan is geared towards long-term management of species either by RFMO's or within participating countries' EEZs or on the high seas (Davis and Worm 2013). It promotes research and data collection to fill gaps in data, plans for conservation and education initiatives (Davis and Worm 2013). This program also provides guidelines for countries to create their own national conservation and management plans for sharks (Davis and Worm 2013). While efforts are not to be undermined, the implementation of IPOA-sharks and national plans has been a slow effort.

RFMO's such as the International Commission for the Conservation of Atlantic Tunas (ICCAT), the North American Fisheries Organization (NAFO) and the International Council for the Exploration of the Sea (ICES) among others, have established catch limits, finning regulations, and conservation efforts as well as calling for an improved data collections and surveys (Anon. 2005). These RFMOs have binding and non-binding agreements between countries for the conservation of shark species (Anon. 2010c). Nine RFMO's have finning bans, and many use a "fin-to-carcass weight ratio" for compliance, which creates loopholes in regulations (Dulvy et al. 2008).

Shark sanctuaries have increased in popularity in the past couple of years as a management strategy (Ward-Paige et al. 2012). Palau, the Maldives, Honduras, the Republic of the Marshall Islands, and Raja Ampat, Indonesia have dedicated portions of their territories or their entire EEZ to protect critical shark habitats (Ward-Paige et al. 2012). While these sanctuaries may target important feeding, breeding and pupping grounds for sharks (Ward-Paige et al. 2012), they do not protect highly migratory sharks such as white sharks, bull sharks and tiger sharks from being caught.

There are numerous federal Acts and regulations regarding shark management and conservation in the U.S. such as the Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act (MSA) and High Seas Driftnet Fishing Moratorium Protection Act (High Seas Act). The U.S. has also signed on to numerous of the above-mentioned international agreements to focus on improving data collection and develop species specific conservation and management measures (Anon. 2013). Our national regulations on sharks have improved since their inception in 2000 to provide a solid law with little ambiguity. An explanation of specific federal and state regulations will illustrate the U.S.' efforts for shark conservation and demonstrate why these policies may be obstructing traditional consumption practices.

## **United States Laws and Regulations**

Since 2000, the U.S. has been trying to eradicate shark finning within its Exclusive Economic Zone (EEZ). Prior to 2000, the US did not regard shark management as a priority as the national volume of shark catch and price of sharks were substantially less than other more commonly exploited fisheries (National Marine Fisheries Service 2005). The directed efforts of international shark fishing and global demand for shark products has resulted in numerous international initiatives, prompting the U.S. to examine the severity of the international exploitation of sharks (Anon. 2005). Now, the U.S. has become a leader by promoting shark conservation and management through its commitment to uphold federal regulations as well as its dedication to the development of international agreements (Anon. 2013). The introduction of the SFPA was the first in a series of regulations put in place for shark finning management. While the SFPA was not perfect, it brought shark finning and the resultant reduction in the population of sharks to the forefront of United States policy. The SFPA amended the MSA (16 U.S.C. 1857(1)) to incorporate finning restrictions (H.R. 81). To close loopholes in the regulations, the Shark Conservation Act of 2010 (SCA) was established, and required the whole shark to be landed before any type of finning can occur. These Acts, and U.S. state regulations will be explained to give a perspective on how they fit together to create a comprehensive shark finning regulation and how it has influenced stakeholder opinions.

## **Federal Laws and Regulations**

The SFPA is directed by the National Oceanic and Atmospheric Administration (NOAA) and the National Marine Fisheries Service (NMFS). It prohibits any person aboard a "U.S. fishing vessel from possessing shark fins without the corresponding carcass or to land any such fin without the corresponding carcass" (H.R. 5461). The SFPA was passed by Congress in 2000 to support the

conservation of domestic and international shark stocks and to end finning practices (H.R. 5461). Section 9 of the SFPA describes shark finning as “the taking of a shark, removing the fin or fins (whether or not including the tail) of a shark, and returning the remainder of the shark to the sea” (H.R. 5461). The SFPA amended the MSA, required the Secretary of Commerce to initiate discussions with other nations to prohibit shark finning, provide a report of a list of nations that practice shark finning and to research Pacific and Atlantic shark populations (H.R. 5461).

The MSA is the principle law that governs the management of marine fisheries in the federal waters of the United States. It was enacted in 1976 and then amended in 1996 and 2006 to include further policies on rebuilding fish stocks, protecting habitats and reducing the instances of bycatch. The MSA is regulated by NOAA and the Department of Commerce. Within NOAA lies the NMFS which monitors and regulates all marine fisheries within 200 nautical miles of our EEZ (H.R. 5946). Additionally, Section 302 of the MSA established eight Regional Fishery Management Councils that have authority over fisheries stocks in their designated regions (H.R. 5946). Each council must prepare fisheries management plans for their regions and submit to the Secretary of Commerce for approval (H.R. 5946). NMFS manages sharks and other highly migratory species in the EEZ on the Atlantic coast, except for the spiny dogfish, which is managed jointly by the Mid-Atlantic and New England Fishery Management Councils (NOAA Anon. 2013). On the Pacific coast, shark species are managed by the Pacific, North Pacific and Western Pacific Regional Fishery Management Councils (Anon. 2013). The Secretary of Commerce then has the responsibility of carrying out each approved management plan. Additionally, Section 302 asserts that the Secretary of Commerce will enforce all highly migratory species stocks on the Atlantic coast of the U.S., relieving the New England Council, Mid-Atlantic Council, South Atlantic Council, Gulf Council, and Caribbean Council of highly migratory fisheries duties (H.R. 5946). The Highly Migratory Species Department of NOAA must prepare fisheries management plans for approval by the Secretary of Commerce (H.R. 5946). The U.S. Coast Guard is the primary of this Act and anyone violating any portion will be brought in for a hearing (H.R. 5946). Upon findings of acts committed in violation of Section 307, the section in which shark finning is prohibited, the Secretary can apply fines up to \$100,000 and/or imprisonment for each violation (H.R. 5946). Fishing vessels, gear, cargo and fish can be seized used within the violation of Section 307 (H.R. 5946).

The Shark Finning Prohibition Act of 2000 amended Section 307 (1) of the Magnuson Stevens Act:

“(P)(i) to remove any of the fins of a shark (including the tail) and discard the carcass of the shark at sea;



(ii) to have custody, control, or possession of any such fin aboard a fishing vessel without the corresponding carcass; or

(iii) to land any such fin without the corresponding carcass.

For purposes of subparagraph (P) there is a rebuttable presumption that any shark fins landed from a fishing vessel or found on board a fishing vessel were taken, held, or landed in violation of subparagraph (P) if the total weight of shark fins landed or found on board exceeds 5 percent of the total weight of shark carcasses landed or found on board” (H.R. 5461).

The 2000 amendments to the MSA left many loopholes that fishermen successfully exploited, continuing the increase of shark finning in the U.S. The transshipment of fins from a foreign vessel to a U.S. vessel on the high seas was not prohibited under the MSA, and thus was a way to get around the ruling. In order to close this loophole, on December 20, 2010, President Barack Obama passed the International Fisheries Agreement Clarification Act, dubbed the Shark Conservation Act of 2010 which modifies the MSA and the High Seas Act in order to prohibit the amputation of shark fins from the carcass at sea. Fishermen must land the entire shark carcass before removing the fins.

The Shark Conservation Act of 2010 amended Section 307 (1) of the Magnuson-Stevens Act:

“(P) (i) to remove any of the fins of a shark (including the tail) at sea;’

‘(ii) to have custody, control, or possession of any such fin aboard a fishing vessel unless it is naturally attached to the corresponding carcass;’

‘(iii) to transfer any such fin from one vessel to another vessel at sea, or to receive any such fin in such transfer, without the fin naturally attached to the corresponding carcass;’ or

‘(iv) to land any such fin that is not naturally attached to the corresponding carcass, or to land any shark carcass without such fins naturally attached;’ and

‘For purposes of subparagraph (P), there shall be a rebuttable presumption that if any shark fin (including the tail) is found aboard a vessel, other than a fishing vessel, without being naturally attached to the corresponding carcass, such fin was transferred in violation of subparagraph (P)(iii) or that if, after landing, the total weight of shark fins (including the tail) landed from any vessel exceeds five percent of the total weight of shark carcasses landed, such fins were taken, held, or landed in violation of subparagraph (P). In such subparagraph, the term ‘naturally attached’, with respect to a shark fin, means attached to the corresponding shark carcass through some portion of uncut skin.’

‘(b) Savings Clause-

(1) In general- The amendments made by subsection (a) do not apply to an individual engaged in commercial fishing for smooth dogfish (*Mustelus canis*) in that area of the waters of the United States located shoreward of a line drawn in such a manner that each point on it is 50 nautical miles from the baseline of a State from which the territorial sea is measured, if the individual holds a valid State commercial fishing license, unless the total weight of smooth dogfish fins landed or found on board a vessel to which this subsection applies exceeds 12 percent of the total weight of smooth dogfish carcasses landed or found on board” (H.R. 81).

The SCA also amended the High Seas Act (16 U.S.C. 1826k(a)). The High Seas Act was passed by Congress and became law in 1995. This Act was created to address Resolution 46-215 of the United Nations General Assembly global moratorium on large-scale driftnet fishing in the high seas (Public Law

102-582). It bars the United States from participating in any international agreement that may compromise this moratorium (Public Law 102-582). The High Seas Act is regulated and enforced by numerous government authorities including the Secretary of State who carries out foreign policy initiatives and agreements including United Nations agreements, the Department of Defense, the U.S. Coast Guard, and additional relevant federal agencies that will “detect, monitor, and prevent violations” for all fisheries in U.S. waters under the United Nations moratorium (Public Law 102-582). As per section 206(e) of the MSA, after discussing with the Secretary of State and Homeland Security, the Secretary of Commerce must submit annual reports on efforts, progress, new high seas fisheries and a list of those countries that do not adhere to the moratorium. NOAA and the NMFS must complete these annual reports which include information on shark catch and shark fins from various countries (H.R. 5461).

The amendment in relation to the Shark Conservation Act of 2010 modifies Section 608(a) of the Act:

“...(F) to adopt shark conservation measures, including measures to prohibit removal of any of the fins of a shark (including the tail) and discarding the carcass of the shark at sea;’...

‘...(3) seeking to enter into international agreements that require measures for the conservation of sharks, including measures to prohibit removal of any of the fins of a shark (including the tail) and discarding the carcass of the shark at sea, that are comparable to those of the United States, taking into account different conditions; and...’

‘...(A) fishing vessels of that nation are engaged, or have been engaged during the preceding calendar year, in fishing activities or practices in waters beyond any national jurisdiction that target or incidentally catch sharks;’ and

‘(B) the nation has not adopted a regulatory program to provide for the conservation of sharks, including measures to prohibit removal of any of the fins of a shark (including the tail) and discarding the carcass of the shark at sea, that is comparable to that of the United States, taking into account different conditions’”(H.R. 81).

As stated in Shark Population Status’ Economic Analysis section, both the SFPA and the SCA have greatly reduced the number of sharks finned in U.S. waters, but the reduction in the quantity of fins has increased the price per fin, effectively encouraging the import and export of illegal fins. State bans have made it difficult for these sectors in those particular states to make a profit off of this commodity. Additionally, states without bans have lost a distribution market to states with bans.

## **State Laws and Regulations**

The scope of the SFPA and the SCA mandate revisions in the MSA and the High Seas Act which are both Federal laws, thus the U.S. is subject to adhere to these laws at a minimum. Currently, numerous states have set higher standards by banning the possession, sale, trade and distribution of

shark fins altogether. Hawaii, California, Washington, Oregon, Illinois as well as Guam and the Commonwealth of the Northern Mariana Islands have implemented trade bans. Florida, Virginia, Texas, Maryland and New York have proposed similar bills and are likely to pass a trading ban within the year. State bans have more stringent shark fin regulations that must be adhered to by the citizens of those states.

Hawaii was the first state to ban shark finning and did so before the national ban was passed. Hawaii S.B. 2169 passed by Governor Linda Lingle in 2010 prohibits anyone to “possess, sell, offer for sale, trade, or distribute shark fins” unless they have the following: a permit from the Department of Land and Natural Resources educational research, or a license issued from the department of health to use fins for consumption by July 1, 2011 (S.B. 2169; Anon. 2010d). The penalty of possessing shark fins in Hawaii increases with offense from fines to imprisonment (S.B. 2169). Other states drafted similar legislation, and each provided clauses about possession until a certain date. Each state also enacted penalties if found breaking the law, ranging from misdemeanors to felonies and fines reaching \$50,000.

California in particular has felt backlash due to the enactment of these new regulations. Senator Ted Lieu of California states that the ban “goes out of its way to be discriminatory,” and that, “they single out one cultural practice” (Eilperin 2012). The Asian American Rights Committee of California has filed a law suit against the State of California asserting it “violates Congress’ authority to regulate interstate commerce” by abolishing interstate trade of shark fins (Tucker 2012). Additionally, Asian Americans for Political Advancement and the San Francisco Chinatown Neighborhood Association organizations sought an injunction to stop the California law from banning shark fins because “it unfairly targeted the Asian-American community” (Knowles 2013). The injunction was denied.

While many may think that this is a coastal state problem due to its access to waterways for imports and exports, it is also a problem for inland states. As more and more coastal states ban the sale, trade, possession and distribution of shark fins, their neighboring inland states will have to import them through other means. The demand for shark fin soup still lies within states that have a ban on finning. Distributors, grocers and restaurants will go above the law to import fins over state lines (Fung, personal communication). Shark finning is a practice that spans over all states.

## **Present Day Opinion**

Increase in international, national and local awareness of shark finning and shark population status has seemed to have caused a divide in how people feel about shark fin soup consumption. Much of the older generations in Asian cultures observe the traditional beliefs of shark fin’s medicinal

properties of strength and health (Clarke et al. 2007). They are also more inclined to assert the importance of offering shark fin soup at celebratory events such as weddings and festivals (Clarke et al. 2007). While many are distraught by the bans, a shift has given younger generations mixed feelings on the issue. “It’s not as big a deal for me as it is for my parents,” Frank Wong of California states in a New York Times article (Brown 2011). The youth in other states are revealing similar opinions. A New York man states that “It’s only the elderly who want it: when their grandkids get married, they want the most expensive stuff, like an emperor” (Rosenthal 2012). Younger generations are straying away from the dish because it is not an environmentally sustainable practice (Rosenthal 2012).

Personal communications verified these peer reviewed publications and articles. A San Francisco resident recently struggled with her choice to have a traditional Chinese wedding that served shark fin soup. “Many people my age are picking and choosing the traditions that they want to uphold” and traditional banquets are not as common as they were when she was a child (Fung, personal communication). While she is strictly against the consumption of the soup due to the exposure of the practice through a documentary, her relatives have a different opinion (Fung, personal communication). For her parents it was a symbol of prosperity and good luck; for her grandparents it was a status of class (Fung, personal communication). She didn’t want it served at her wedding but knew that it was important for her parents and grandmother, especially to honor her grandmother before she passed (Fung, personal communication).

While she honored her parents and grandmother’s wishes, she said that there are other dishes that can be served as a symbol of prosperity and good luck, or as a symbol of status (Fung, personal communication). Birds nest soup has the same exact meaning as shark fin soup: prosperity and good luck (Fung, personal communication). The status of the soup can be increased by the addition of seafood into the soup (Fung, personal communication). A new trend for weddings has also been winter melon soup carved with dragon and phoenix with a double happiness symbol (Fung, personal communication). While she didn’t know if it was an Americanized soup or had some type of traditional meaning, she did state it costs \$400 to 500 a bowl, much more expensive and elaborate than shark fin soup (Fung, personal communication).

A New York resident who grew up in Chinatown advocates for the protection of sharks and works to educate others to reduce the consumption of shark fin soup. “It’s like saying everyone should get a BMW when they graduate from college” (Kwan, personal communication). He says that it is primarily a luxury item, more than a cultural centerpiece (Kwan, personal communication). It is about keeping up with the Joneses (Kwan, personal communication). He has spoken with other residents who

have expressed their support for the ban because the added social pressure of serving the soup at weddings and other functions will not be there anymore (Kwan, personal communication). The ultimate narrative in the media is that there is a cultural war happening and it is making shark fin out to be a bigger cultural practice than what it really is (Kwan, personal communication).

Growing up in the restaurant industry he knows that employees of banquet halls use shark fin as a promotional item to entice people to hold their weddings there (Kwan, personal communication). If they buy a wedding package, they will include the shark fin soup for free (Kwan, personal communication). Banquet halls will also upsell the soup and pressure potential guests to serve it “because they are supposed to do this” (Kwan, personal communication). The reality is that many cannot afford the soup and then the banquet hall will then say they will discount it for you (Kwan, personal communication). These opinions and research led me to reflect upon this environmental and cultural conflict. I wanted to discover if these attitudes presented in the media and by colleagues were a commonly held attitude, or just by a few environmentally conscious people in this society.

## Methods

### Why social surveys?

After understanding the importance of food tradition in Asian cultures, the dire need to stabilize shark populations and hearing mixed opinions on shark fin soup consumption, I wanted to know if there was a real generational shift and what are the reasons were behind it. Is the shift prevalent in certain areas due to the introduction of regulations, is it based on awareness of shark conservation or is it simply a loss of tradition? Therefore, I selected the social survey method to identify and provide insight into these questions. Data for this survey was gathered through a mixed methods web-based survey and through intercept survey methods. Survey research is one of the most extensively used research techniques in social science fields and is considered an acceptable form of analysis by academic institutions (Rea and Parker 2005). Surveys can take information obtained from a small number of respondents and expand it accurately to represent a significant population size (Rea and Parker 2005). Surveys reveal the “attitudes, preferences and opinions” of the respondents and can be used by numerous entities such as financial institutions, restaurants, churches, marketing firms, and policymakers among others to gather information concerning their services (Rea and Parker 2005). Surveys are also one of the best ways to determine personal information and opinions of a population that can be used to formulate effective policy (Rea and Parker 2005).

## Web-based and intercept survey methods

Web surveys are similar to mail out surveys, but instead of a questionnaire being mailed to your house, an email disseminates the survey and requests that the respondent participate by filling out the questionnaire by computer (Rea and Parks 2005). One of the main advantages to web-based surveys is that it is a convenient and efficient way to reach possible respondents (Rea and Parker 2005). It can be fairly inexpensive and can obviate timely and intensive data entry and collection if using a survey building program (Lavrakas 2008). Web-based surveys can also provide the respondent with as much time as needed to complete the survey, and can protect sensitive information (Rea and Parker 2005). Lastly, web-based surveys are very useful when targeting specialized or specific populations (Lavrakas 2008), as I have tried to do with my survey.

Web-based surveys do have some limitations. One of the chief disadvantages to this survey is that the survey is limited to people that have email and internet access, and thus does not represent the general population (Lavrakas 2008). Web-based surveys also assume a level of computer literacy, which is not widespread through the American population (Rea and Parker 2005). I hope to gather surveys from respondents of all age levels, and computer literacy is not as high in the elderly American population as the younger population (Lavrakas 2008). Self-selection is also a disadvantage, as many respondents cannot read certain languages, and will therefore be excluded from the survey (Rea and Parker 2005). Lastly, since the interviewer is not involved, questions that may seem vague to the respondent cannot be explained (Rea and Parker 2005).

Intercept surveys are similar to the in-person survey, except you obtain information from people who pass by in a public area. I did not wait for respondents to pass by, but walked into their place of business and asked if they would like to participate in a research study. This form of surveying is similar to intercept surveying because I did not contact the respondent before I stepped into their business. The advantage to this type of surveying is that if respondents have questions about the survey, I was there to clarify information (Rea and Parker 2005). This form of survey is also a cost-effective way of gathering data (Rea and Parker 2005).

The disadvantages to intercept surveys are that it creates a nonrandom selection of respondents as the interviewer only selects the respondents at his or her convenience (Lavrakas 2008). The time or day that the intercept surveying is done also creates a population bias (Lavrakas 2008). Lastly, bias can be created through the interviewer's hand gestures or facial expressions, forcing the respondent to respond one way or another (Rea and Parker 2005). While there is a bias of non-random selection with

intercept surveys, I chose to include this type of surveying to try to eliminate the generational bias of web-based surveys, and target respondents that may be older and less likely to be computer literate.

## Implementation

My survey questions were designed based off of my three main questions to test the existence and scope of my hypotheses:

- Is the shift in opinion on shark fin soup and cultural traditions prevalent in certain areas due to the introduction of shark finning regulations?
- Is the shift in opinion on shark fin soup and cultural traditions based on awareness of shark conservation?
- Is the shift in opinion on shark fin soup and cultural traditions it simply a loss of tradition?

I developed shark finning hypotheticals and regulatory questions based on peer reviewed articles, non-profit reports and newspaper articles I had read on shark status and regulations (Lack and Sant 2011; Rosenthal 2012; Techera and Klein 2011). I developed my shark fin soup consumption questions based on additional peer reviewed articles, non-profit reports and personal communication (Buckley and Hile 2007; Fabinyi 2012; Kwan personal communication 2012). Based on conversations with professors at the Duke University Marine Lab, I was able to determine additional survey questions that would help identify a change in attitude towards shark fin soup consumption. These professors had extensive field experience with survey methods. Lastly, I had developed a solid understanding of shark population status and finning practices from a research position that I held with Shark Savers in 2011. Feedback was sought from Dr. Lisa Campbell (Rachel Carson Associate Professor of Marine Affairs and Policy, Duke University Marine Lab) and Dr. Douglas Nowacek (Repass-Rodgers University Associate Professor of Marine Conservation Technology, Duke University Marine Lab) on the order, content and wording of the questions. The survey was pretested for timing purposes by other master students at the Duke University Marine Lab. My final set of questions went through numerous professorial evaluations, and review from the Duke University Institutional Review Board. Once approved, the survey was then sent out to a colleague be translated into simplified Chinese. The survey was updated on Microsoft Word and through the online survey tool, Qualtrics.

The final survey was comprised of the following:

- 17 multiple choice questions, requiring one choice (e.g. Have you ever eaten shark fin soup?).

- 4 multiple choice questions, requesting respondents to choose any of the above, with option to enter an answer for “Other” (e.g. If the frequency of your consumption has decreased over the past five years, is it due to? Please choose all that apply.).
- Open space for comments.

Based on the survey pretests, respondents should not have spent more than 15 minutes to complete the survey unless they provided substantial comments at the end of the survey.

## Respondent Selection

When deciding upon my study area, I determined that I should survey people in and around three major U.S. cities that may have ties to Asian cultural traditions and the consumption of shark fin. I also determined that I should chose a city that had already passed a shark fin ban, one that had proposed the ban and another that had did not have any shark finning regulations. I chose San Francisco, CA, New York, NY and Washington, DC. San Francisco County which is comprised of the city and surrounding areas has a population of 825,863, 33.9% of which are considered Asian-American (U.S. Census Bureau). While this percentage also takes into account other races, I knew that a fair amount of citizens would be Chinese, Hong Kongese and Taiwanese due to the cultural center of Chinatown in San Francisco. I drew similar conclusions about the other two cities and their social ties to Asian-American cultures. New York County has a population of 1,619,090, 11.8% of which are Asian-American (U.S. Census Bureau). New York has the largest market for shark fin and has the largest concentrated Chinese community outside of Asia (Kwan, personal communication). Washington, DC has a population of 632,323, 3.7% of which are Asian-American (U.S. Census Bureau). I knew that with limited funds and access to emails and addresses, I would not be able to reach a true representative sample, but was determined to receive as many surveys as possible from each location.

## Distribution

I distributed my survey via email through four methods:

- I contacted colleagues at Duke University’s Nicholas School of the Environment via email to ask them if they could send the link to my surveys to their friends and family.
- I contacted family members and friends via email to ask if they could send the link to my survey to their family and friends.
- I researched for email addresses to employees at cultural associations in each city and sent an email requesting them to send out the link to my survey to their members, family and friends.



- I researched student groups in colleges and universities that may be interested in sending out my survey and emailed them the link.

I distributed my survey via social media through three methods:

- I used the Qualtrics database social media applications to send my survey link through StumbleUpon.
- I posted my survey link to LinkedIn Asian cultural groups.
- I used Facebook to create an event with the links to my survey.

I also had flyers put up in Chinatown in New York, with rip off tabs that provided a shortened web link to the survey. Lastly I went to Chinatown in Washington, DC and distributed my survey through intercept methods.

## Results and Analysis

The survey opened on January 9, 2013 and closed on April 15, 2013. During this period, I received 93 surveys, 77 of which I could use. 16 surveys were not fully completed so they were left out of the analysis. Figure 1 below shows the breakdown of surveys received by city. I received 13 surveys from New York, 29 surveys from San Francisco and 35 surveys from Washington, DC.

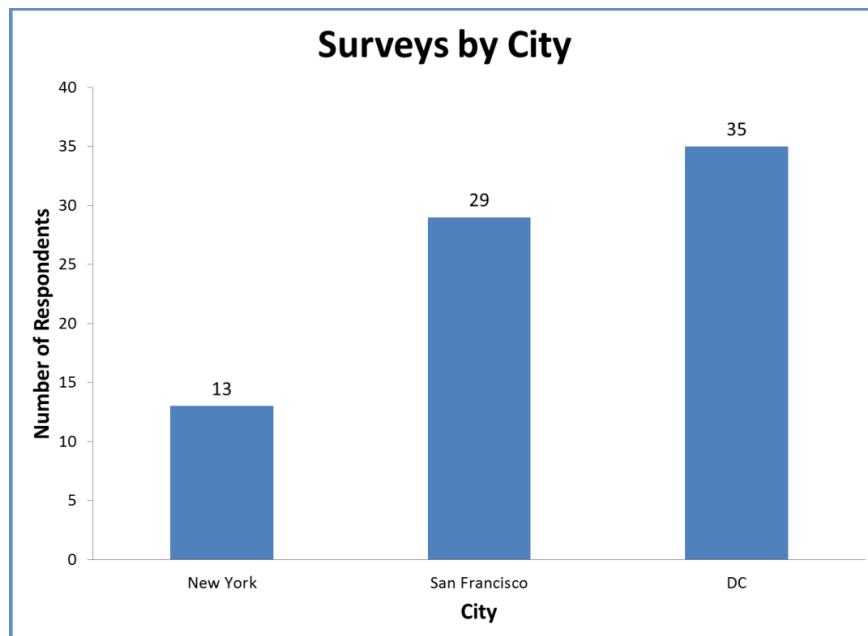


Figure 1: Number of survey respondents based on their chosen city.

I was able to use intercept methods to gather surveys in Washington, DC but not the other cities. This could account for the higher response rate from Washington, DC than the other two cities.

Interestingly enough, I had flyers put up in New York, the city with the lowest amount of respondents, and did not see an increase in responses during that time. This must mean that flyers are not always an effective means for soliciting respondents. For San Francisco, I only distributed the surveys via email and social media.

Figure 2 below illustrates the breakdown of respondents by age range. I received the most respondents in the age range of 22-34, followed by the range of 35-44. I did not receive any surveys by anyone 65 and older.

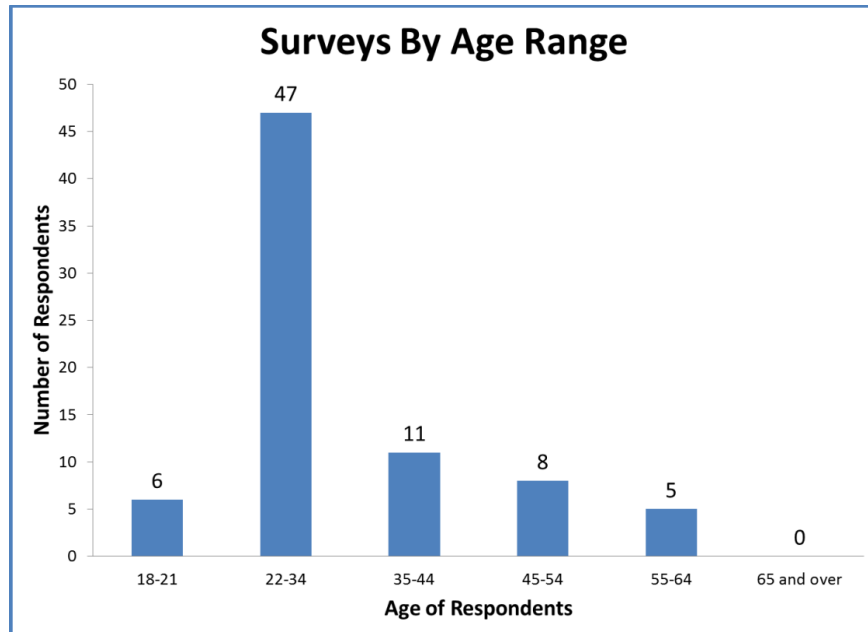


Figure 2: Number of survey respondents by age range.

I was not surprised that my highest response was from respondents between the ages of 22-34. I enquired with colleagues at the Nicholas School of the Environment who are within this age range to see if they would be able to pass along my survey to family and friends. Additionally, I emailed student groups at universities in the three selected cities. I was surprised that I did not receive any responses by anyone over the age of 65. When I did intercept surveys in Washington, DC, I found that most of the people I met who may have been in this age range were not able to read English or Simplified Chinese, but only traditional Chinese. This may be due to the fact that Simplified Chinese was introduced in China at the start of the 1960's.

The respondents' selection on what government authority should regulate shark fin sale, trade and possession is shown in Figure 3, below. Many stated the federal government, and only two believed that municipal governments should have the authority.

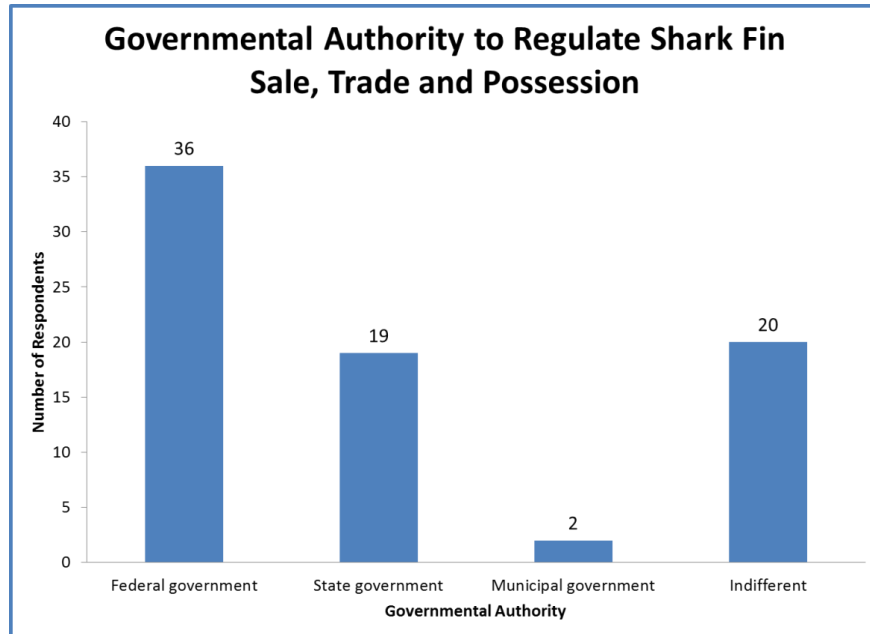


Figure 3: Respondents' selection on what governmental authority should regulate shark fin sale, trade and possession.

While the majority chose the federal government as the ultimate authority on shark finning regulations, many also thought the state government should implement regulations. When looking more closely at the results as in Figure 4, I found that of the 29 respondents from San Francisco, 14 of them wanted sale, trade and possession to be regulated by the federal government, while only 4 wanted it to be regulated by state government. 10 respondents were indifferent on the governing body. In Washington, DC, responses were more balanced, with 15 respondents choosing the federal government and 11 respondents choosing the state government. New York respondents had 7 for federal and 4 for state government.

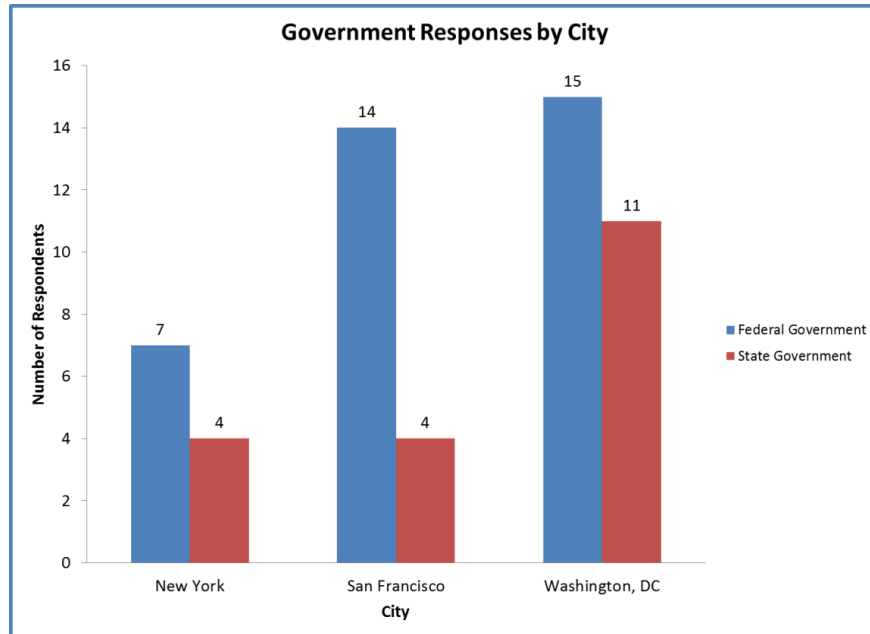


Figure 4: Government responses by city.

Figure 5, below illustrates how many respondents understand that shark populations are declining. Only 32% of respondents knew that shark populations were declining. This is an interesting percentage, and brings to light the need for increased education and awareness on this issue.

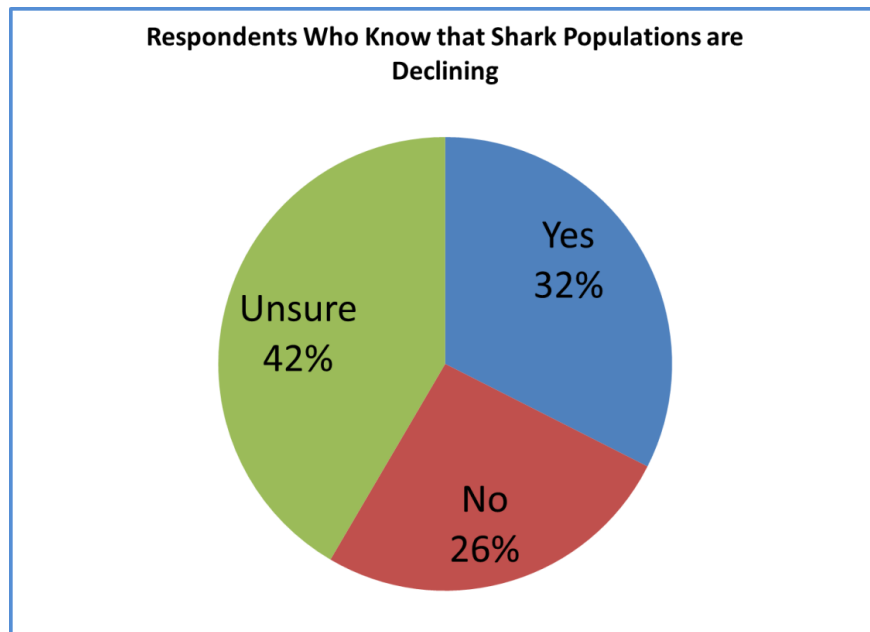


Figure 5: Respondents understanding of shark population decline.

Figure 6 illustrates respondents' frequency in consumption of shark fin soup. 75% of respondents have eaten shark fin soup in their lifetime. 25% or 19 of the respondents have eaten shark fin soup over 15 times. 14 out of the 19 respondents who had eaten shark fin soup more than 15 times were from San Francisco. It is unclear if this means that the soup is more readily available in San Francisco, if respondents come from wealthier families, or if respondents follow more traditional practices.

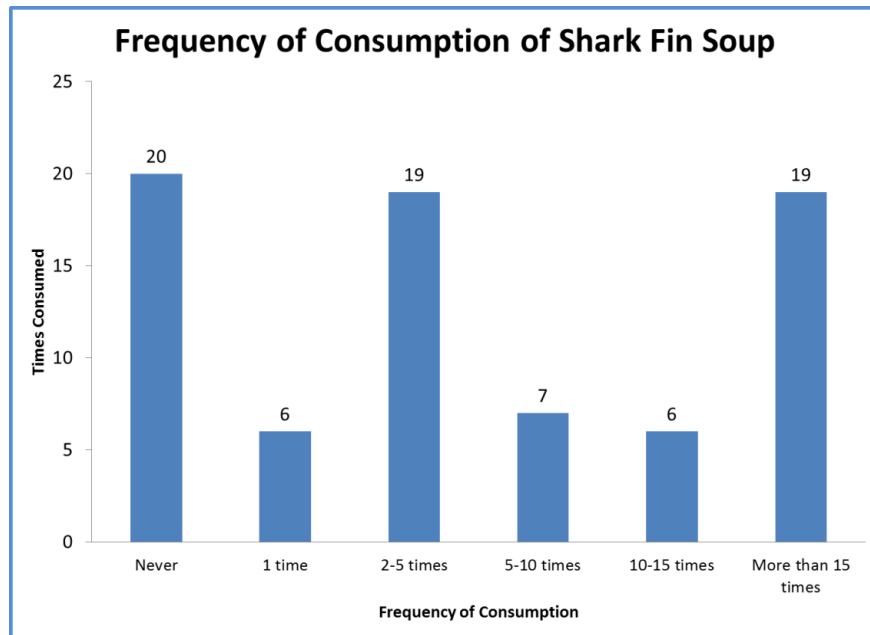


Figure 6: Frequency of consumption of shark fin soup over lifetime.

Figure 7 illustrates how soup consumption has changed over the past five years. Many respondents (44%) stated that their consumption has stayed the same, but a fair amount (39%) has decreased their consumption significantly. Only 1% of the respondents have increased their consumption by a lot in the past five years.

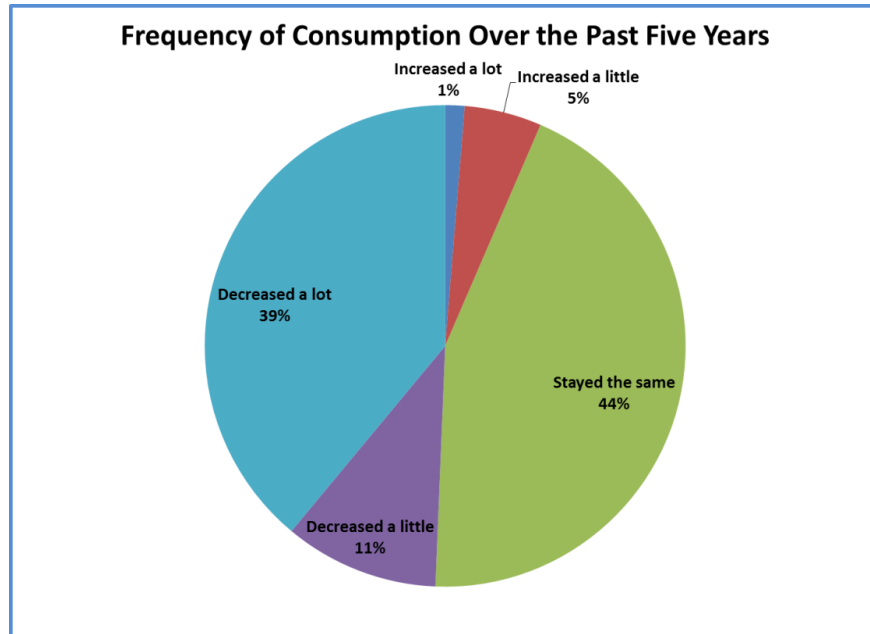


Figure 7: Frequency of Consumption over the past five years.

Table 1 lists the reasons why frequency in consumption of shark fin soup has decreased in the past five years. Many respondents cited environmental concerns as their top reason for decrease. Higher priced soup is also another main reason for the decrease in consumption.

Why Has Frequency Decreased?	
Availability	13
Lack of interest	9
Pressure from family	3
Pressure from friends	2
Environmental concerns	22
Higher price of shark fin soup	16
Other*	4
Frequency stayed the same	16
Has not decreased	12

Table 1: Reasons for decreased frequency of consumption for shark fin soup. Responses to Other were “Vowed to never have it again”, “No special need”, “Only at weddings/special occasions”, “I saw how we cut fins on TV. It was inhuman so I never eat it anymore.”

Table 2 lists the occasions where respondents have most frequently eaten shark fin soup. Weddings as well as festivals and holidays were the major places where shark fin soup has been eaten. This is consistent with research and personal communications on where shark fin soup is primarily served.

Occasions Where Shark Fin Soup is Served	
Wedding	39
Birthday	16
Festival/Holiday	31
Business Function	13
Anniversary	4
Retirement	0
Other*	2
I have never eaten shark fin soup	17

Table 2: Occasions where shark fin soup is served. Responses to Other were “At a party”, “I’m against this”.

When deciding upon my questions, I felt that there were two main questions that were very important to ask: “Is serving shark fin soup an important tradition to my family?” and “Is serving shark fin soup an important tradition to me?”. I wanted to see what city found the tradition most important, and if respondents felt the same way as their families. Figure 8 illustrates that San Francisco mostly Agreed or Neither Agreed nor Disagreed about their family’s importance to the tradition. Washington, DC respondents felt as though serving shark fin soup was not an important tradition in their family. New York’s results were fairly even across Agree, Disagree and Strongly Disagree.

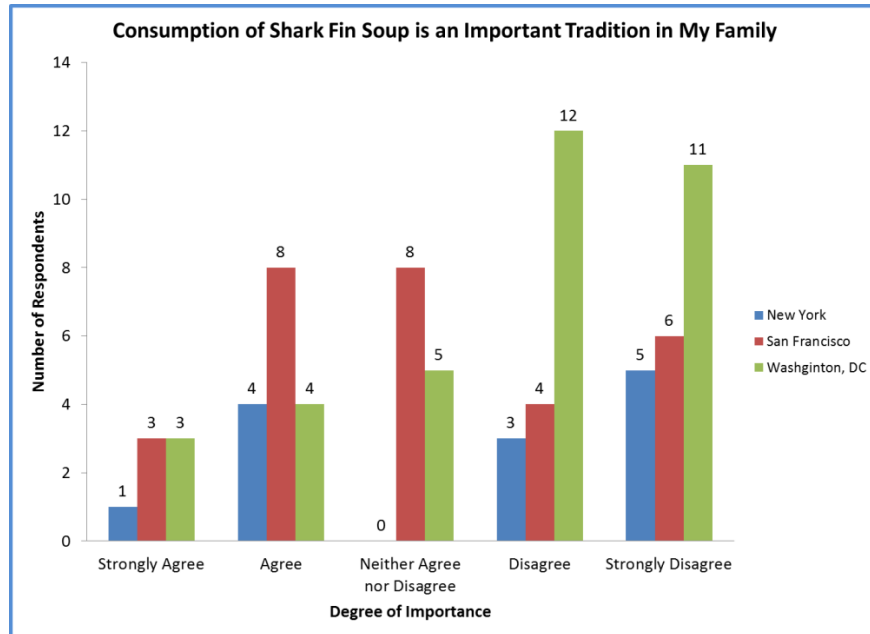


Figure 8: Consumption of shark fin soup as an important tradition to family.

Figure 9 shows that consumption of shark fin soup as an important tradition to the respondents was of lesser importance than their family. New York reduced its respondents in the Strongly Agree and Agree Section, and increased in the Strongly Disagree section. San Francisco respondents stayed fairly consistent with only a small decrease in the Agree portions and a small increase in Disagree portions. Washington, DC respondents were more likely to Disagree or Strongly Disagree than Agree. The city of Washington, DC seemed to not keep with traditions as much as San Francisco or New York.



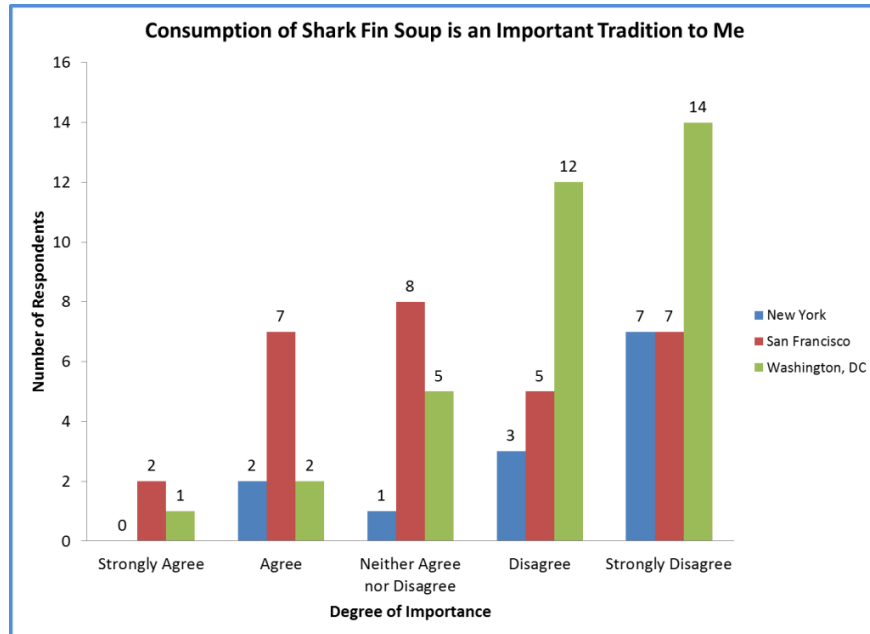


Figure 9: Consumption of shark fin soup as an important tradition to me.

It is interesting to see this breakdown between family and personal traditions and to try to analyze if this is influenced by regulations. San Francisco has respondents across all categories in Figure 8 and 9. Respondents may have felt a need to build a stronger connection to their traditions once this regulation was passed. Washington, DC's respondents on the other hand, did not find this tradition as important. If stricter regulations ever pass, it would be interesting to survey these respondents again to see if their attitudes have shifted.

To illustrate whether the younger generation of respondents finds tradition as important to them as to their family, I broke out the age ranges of 18-34 and assessed the results in Figure 9. I specifically chose to assess the Strongly Agree, Agree and Neither Agree or Disagree category of importance their parents and correlated that to their response. Those in this age category that chose Disagree or Strongly Disagree for their parents tended to align with those opinions except for one outlier who believed that tradition was more important to them than to their family. I found that those two respondents that Strongly Agreed with the tradition of consuming shark also held the same traditions of their parents. The majority felt that tradition was less important to them than to their family. To see a full list of responses by Age, Family Tradition and Personal Tradition, please see the Raw Data section of the Appendix.

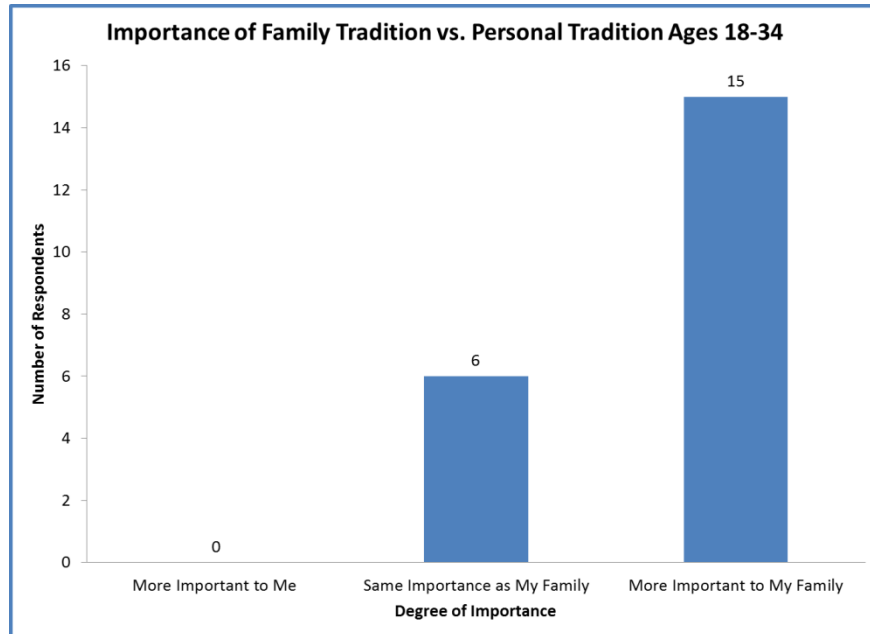


Figure 10: Respondents age 18-34: The importance of shark fin soup as a tradition. Family vs. Personal opinion.

I decided to illustrate this again in Figure 11, but for respondents in the age ranges of 35-64. Only one respondent felt as though traditions were more important to them than to their family. Many felt that they had the same traditions and only two felt that traditions were less important to them. I believe that if there were responses from respondents over the age of 65, then they would have illustrated that their traditions were more important to them than to their family (children and grandchildren).

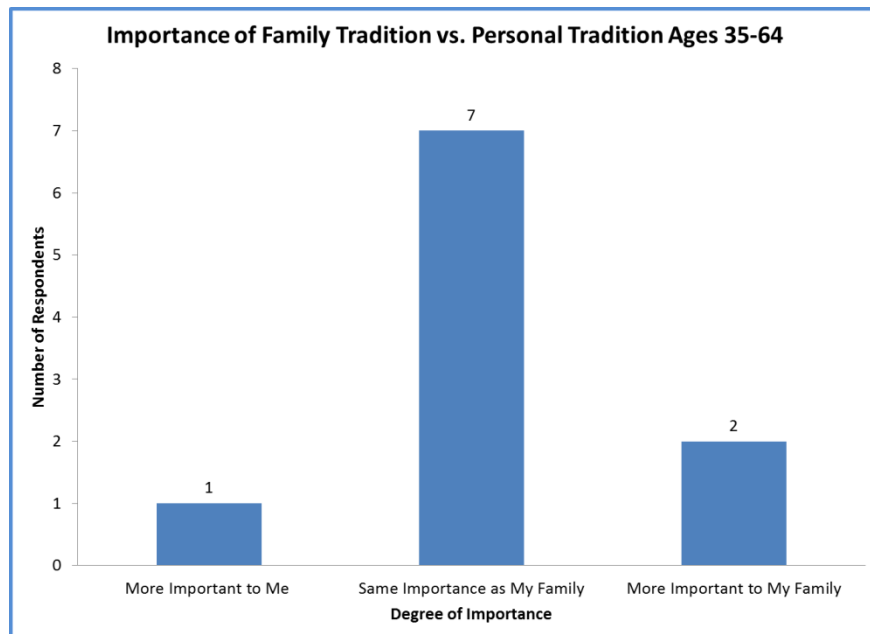


Figure 11: Respondents age 35-64: The importance of shark fin soup as a tradition. Family vs. Personal opinion.

## Opinions Offered

As I did not receive enough surveys to be statistically significant, I was worried that I would not find enough variation in the responses to come to a conclusion. When I started to receive my responses, I was surprised to see how many people took advantage of the comments section at the end of the survey. Many respondents did comment on the state of sharks and shark fin soup, some with a sentence and others with a story. These comments helped to verify my hypothesis. I have broken the comments into two sections. One section is in favor of shark finning and traditions and the other section is against.

In favor:

- “Shark fin should be preserved because it represents an important culture value for Chinese.”
- “Some in Asian community feel banning shark finning is a racially biased action. I somewhat agree to that aspect. If we are banning shark finning, we should ban the consumption of the entire shark.”
- “Important role in Chinese celebration.”
- “Shark fin soup is a cultural component of Chinese. It should not completely banned; instead, the usage of shark fin may be regulated so that the identity of this cultural value will be kept.”
- “I like to eat shark fin soup because it's a part of tradition in Chinese culture especially for big events. If shark fin removal was more expensive and controlled as a major delicacy, I think it would be okay. Scientists should figure out ways to use the whole shark for food, medicine, etc. perhaps find ways to have shark farming.”

Against:

- “I grew up eating shark fin as I am Chinese American, but I love sharks. They are my favorite animal and now I've vowed never to eat it again.”
- “As I understand it, shark fin is tasteless and virtually unimportant to actual flavor of shark fin soup. My consumption in the past has been due to ignorance of the actual nature of the soup, but now I am more aware to find out what I am eating before I try it.”
- “Ever since I was made aware of the inhumane and wasteful harvesting of shark fin, I have been opposed to eating shark fin soup based more on moral/environment ideals over taste preferences.”
- “Two of my children never partake in eating shark fin soup because of finning.”

- “The older generation in my family is still very much interested in having shark fin soup, but the entire younger generation hates the idea and has actually threatened to boycott family dinners.”
- “My parents are both immigrants from Hong Kong. I am a first generation US citizen. I oppose the tradition of consuming shark fin soup although it has led to tension in my family. I opposed it purely because shark fin did not seem appetizing, however if the above statements about the unethical harvesting of fins are true, I suppose I now oppose it on an ethical basis too.”
- “Due to the environmental concern, I have committed not to serve Shark Fin soup in my wedding in the future. Even though I understand Chinese community may have a bit negative opinion about not serving expensive item, I think I will still stick with my choice.”
- “I hope the government acts strongly against killing sharks and reinforces shark protection and promotes educational outreach.”
- “Every animal represents a form of life. Please cherish it.”

These opinions illustrate that while there are people who value the tradition of eating shark fin soup, they understand that it should be discontinued. Others see this tradition as important and that it should be continued as it is now, or in another form that would be more sustainable. Still, others explain that their parents want to uphold the family tradition while they are against shark fin soup consumption.

## Recommendations

Shark populations are diminishing, which can potentially harm our ocean ecosystem. The government must put forth effort to resolve this issue within our EEZ and internationally through treaties. We must also not forget about our nation’s people and their right to practice their tradition. Where then, do we draw the line? Through my research and my surveys, I offer the following recommendations.

### Refine and Expand the Pilot Study

I recommend refining and expanding on this pilot study. Refine the pilot study by asking more specific questions about tradition. ‘Is shark fin soup consumption important to your parents?’ ‘Is shark fin soup consumption important to your grandparents?’ ‘Is shark fin soup consumption important to your children?’ These questions will aid in understanding where the importance lies within a family. Additionally, refine the pilot study to find if respondents’ traditions have changed based upon the passing of federal and state regulations. ‘Was this tradition important to you before regulations were

passed?’ ‘Was this tradition important to you after regulations were passed?’ ‘Did the passing of federal or state regulations make you more aware of this issue?’ This will help to explain if awareness of regulations have caused citizens to shift their opinions or motivated them to become aware of why this is an important issue. I would also translate this survey into Traditional Chinese characters so that responses can be obtained by those that cannot read English or Simplified Chinese. I also recommend expanding this pilot study to collect more surveys in each city and possibly expanding it to include other cities and states. This will provide a broader response rate, gather more data and be statistically significant. It is important to continue this study to find if traditions are still important to people of the younger generations. This study can inform lawmakers and managers on the opinions of their citizens.

### **Increased Analysis of Shark Population Status**

I urge biologists, academics and fisheries managers to do more research on shark population status. We know very little about shark populations and their reproductive successes. The government should request that the Fisheries Management Councils and the Highly Migratory Species Department of NMFS increase their efforts on the research of shark species. Additional Fisheries Management Plans should be written on shark species in our EEZ. The federal government should also request that state governments require commercial and recreational fishermen to log their shark bycatch data. Very little of this data is available. This will provide scientists and researchers with appropriate data to assess shark stocks. Lastly, with additional and more accurate data, we may be able to determine which shark stocks could be sustainably harvested for their meat as well as their fins. Other shark populations can be targeted and listed and threatened and endangered so that their populations can recover. Recovery is possible. Marine mammals are a perfect example of population recovery as many sharks have similar life-history traits of slow growth and low reproduction (Ward-Paige et al. 2012). Their population recovery was made possible through strict national and international management measures (Ward-Paige et al. 2012).

### **Increased Education and Awareness**

Many survey respondents had chosen not to eat shark fin soup anymore based upon what they had seen on television or what they had learned about the status of shark populations. Many people though, are still unaware of the status of sharks or about the reasons behind their decline. Increased education and awareness on shark populations, the act of shark finning or the consequences of decline in shark population on our ecosystem is imperative in order to certify the motives of U.S. federal and state regulations. It will also cause people to think about the food that they eat and decide

for themselves if it is something they want to continue eating. Media plays a significant role in public opinion by distributing information about environmental issues. Every August the Discovery Channel spends a week educating the public on sharks. Many of these informational programs are geared towards exploiting the fears of viewers through reenactments of shark attacks. Due to the drastic decline in shark populations, and the small percentage of shark attacks that actually occur each year, Discovery Channel should address programming content to overhaul its “Shark Week” series to include information about the drastic decline of this species and the detrimental effects the reduction of shark populations are having on our global marine ecological systems. The millions that watch this program every August will be given information that could influence their understanding of the importance of sharks and garner increasing public support for additional state bans.

### **Come to a Compromise**

Managers, lawmakers and government officials must look to a way to come to a compromise. While shark populations are declining rapidly, we must also take into consideration another social side of the issue. Each race, religion, culture or group has traditions that they practice in remembrance of their ancestors, as a way to give thanks spiritually or to bring them luck, among other cultural norms. The ban of an important component of a traditional practice can be discriminatory and be taken as an offense. Is it fair to ask people not to practice their own traditions? Conversely, with the amount of press and coverage that shark finning and shark fin soup has been getting, many are not taking part in eating this soup anymore. Better knowledge of shark populations, consumption practices and traditional practices will allow lawmakers and regulators to make more informed decisions on how to effectively manage shark populations while determining if the demand for shark fin soup is still growing, or if it is a slowly fading tradition.

### **Conclusion**

#### **Questions unanswered**

My survey solidified many of my theories about the generational divide in the tradition of serving shark fin soup, but was not able to capture the entire picture. I was only able to analyze 77 surveys from three cities, which is an incomplete observation of the population of these three cities as well as an incomplete observation of this cultural tradition in the United States. Additional surveys would have boosted my confidence in the results. Furthermore, no one over the age of 65 was able to answer my survey. I would have liked to gain additional surveys from this age group. Lack of data from

this age group left a hole in the survey results which could have confirmed my hypotheses of shifting opinions from the older generation's point of view. Translating the survey into traditional Chinese could have ameliorated some of this loss of respondents.

### **Additional questions raised**

After receiving responses from my survey, I felt as though I was missing information on this consumptive practice and tradition. For instance, while I felt it was important to ask respondents how their families felt about shark fin soup consumption, I think it would be more important to have the respondent identify how their parents felt, how their grandparents felt and how their children felt about the tradition. This will provide a better understanding of where the divide might be in importance of tradition in each family. I would also include more specific questions on regulations such as those listed in the recommendations. I would also find it worthwhile to ask if respondents felt a stronger connection to their traditions knowing that they were coming under question. Lastly, translating the survey into Traditional Chinese characters will allow for the older population to respond to surveys. It is important that this age group's responses are obtained in order to provide a basis of understanding from the older generation.

### **Summary of Final Recommendations**

My initial hypotheses proposed that there may be a divide between the older and younger generations on attitudes about shark fin soup consumption, cultural traditions and shark finning regulations. These hypotheses originated from literature reviews, newspaper articles and informal conversations. After receiving my surveys and reviewing the results, I found that there is a generational divide on the traditions of shark fin soup, but some of the younger generation still hold on to their traditional beliefs. Thus, my recommendations focus upon gathering additional information on people's attitudes, the need for additional data, the promotion of awareness and to come to a compromise. Each recommendation ties into a different facet of the issue to paint a fuller picture of this environmental and cultural challenge. The implementation of these recommendations will provide citizens with the information to make a choice about eating a disappearing species, and will provide managers and lawmakers with the information to implement sound policies.

Sharks are a vital part of our ecosystem, providing services that many researchers cannot even begin to explain. In an overpopulated and overexploited world, their livelihoods are subject to our choice to fish. While our goal should be to study and conserve these populations, we must also

remember the deep-rooted cultural tradition to utilize this species as a symbol of history, a symbol of tradition and as food. These conflicting sentiments bring us to debate about what is more important: the environment and this species or cultural traditions. If one is chosen over the other, they both may be lost forever. I hope that this report will provide a valuable source of information for those who want to continue to analyze the debate to maintain an essential species or to continue an ancient tradition.



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## Appendix

### Web survey

#### Conservation or Culture? An Analysis of Shark Finning in America

The purpose of this survey is to examine the opinions of Chinese, Hong Kongese and Taiwanese Americans on shark finning, shark fin sales, and shark fin soup. Please fill out the entire survey (answer all questions) in order to be eligible to win the \$50 compensation.

1. Do you think shark populations are:

- Growing
- Staying the same
- Declining

2. To the best of your knowledge, is shark finning (the practice of cutting off the fins of the shark, dead or alive) practiced in the United States?

- Yes
- No
- Unsure

3. Shark fins are sold legally in many states in the United States, but some states like California, Hawaii and Oregon have banned the sale, trade and possession of fins. What authority should regulate fin sale, trade and possession?

- Federal government
- State government
- Municipal government
- Indifferent

4. If you knew that finned sharks get tossed back into the water and drown, would you be:

- Strongly opposed to finning
- Opposed to finning
- Indifferent
- In favor of finning
- Strongly in favor of finning

5. If finned sharks were landed whole, and more of the animal was used (as food, medicine, other?), would you be:

- Strongly opposed to finning
- Opposed to finning
- Indifferent
- In favor of finning
- Strongly in favor of finning

6. If shark finning practices negatively affected other commercially important species, would you be:

- Strongly opposed to finning
- Opposed to finning
- Indifferent
- In favor of finning
- Strongly In favor of finning

7. If finned sharks were fished from demonstrated healthy shark populations, would you be:
- Strongly opposed to finning
  - Opposed to finning
  - Indifferent
  - In favor of finning
  - Strongly in favor of finning
8. Have you ever eaten shark fin soup?
- Yes
  - No
9. How many times have you eaten shark fin soup?
- Never
  - 1 time
  - 2-5 times
  - 5-10 times
  - 10-15 times
  - More than 15 times
10. How has your consumption of shark fin soup changed over the past five years?
- Increased a lot
  - Increased a little
  - Stayed the same
  - Decreased a little
  - Decreased a lot
11. If the frequency of your consumption has decreased over the past five years, is it due to? Please choose all that apply.
- Availability
  - Lack of interest
  - Pressure from family
  - Pressure from friends
  - Environmental concerns
  - Higher price of shark fin soup
  - Other. Please specify. \_\_\_\_\_
  - Frequency stayed the same
  - Has not decreased
12. If the frequency of your consumption has increased over the past five years, is it due to? Please choose all that apply.
- Availability
  - Increase in interest
  - Family occasions
  - Lower price of shark fin soup
  - More disposable income
  - Other. Please specify. \_\_\_\_\_
  - Frequency stayed the same
  - Has not increased
13. On what occasions or celebrations have you eaten shark fin soup? Please choose all that apply.
- Wedding



- Birthday
- Festival/Holiday
- Business function
- Anniversary
- Retirement
- Other. Please specify. \_\_\_\_\_
- I have never eaten shark fin soup

14. Where have you eaten shark fin soup? Please choose all that apply.

- At home
- Restaurant
- Catered events
- Other. Please specify. \_\_\_\_\_
- I have never eaten shark fin soup

15. Do you like the taste of shark fin soup?

- Yes
- No
- Indifferent
- I have never eaten shark fin soup

16. The consumption of shark fin soup is an important cultural tradition in my family.

- Strongly Agree
- Agree
- Indifferent
- Disagree
- Strongly Disagree

17. The consumption of shark fin soup is an important cultural tradition to me.

- Strongly Agree
- Agree
- Indifferent
- Disagree
- Strongly Disagree

18. Please specify your age range:

- 18 to 21
- 22 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 and Over

19. Please specify your gender:

- Male
- Female
- Rather not say

20. Which category best describes your current status?

- Immigrant, temporary visa
- Landed immigrant (green card)
- Immigrant, naturalized US citizen
- First generation US citizen
- Second generation US citizen
- Third generation US citizen
- Other

21. Please select your city or surrounding area:

- New York, NY
- San Francisco, CA
- Washington, DC

Please feel free to provide any comments below.

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# Raw Results

## Survey responses

		English New York	SanFran	DC	Chinese New York	San Fran	DC	Hardcopy DC	Total
1 Do you think shark / populations are:	Growing	0	0	0	0	0	0	1	1
	Staying the same	2	5	1	1	0	1	0	10
	Declining	7	22	12	3	2	4	16	66
2 To the best of your / knowledge, is shark finning (the practice of cutting off the fins of the shark,....	Yes	3	6	8	2	0	2	4	25
	No	3	10	3	1	0	1	2	20
	Unsure	3	11	2	1	2	2	11	32
3 Shark fins are sold / legally in many states in the United States, but some states like California, / Ha...	Federal government	4	13	7	3	1	2	6	36
	State government	3	3	4	1	1	2	5	19
	Municipal government	0	1	0	0	0	1	0	2
	Indifferent	2	10	2	0	0	0	6	20
4 If / you knew that finned sharks get tossed back into the water and drown, would you / be:	Strongly Opposed to finning	7	15	11	3	2	1	11	50
	Opposed to finning	0	8	1	1	0	4	6	20
	Indifferent	1	3	1	0	0	0	0	5
	In favor of finning	0	0	0	0	0	0	0	0
	Strongly in favor of finning	1	1	0	0	0	0	0	2
5 If finned sharks were / landed whole, and more of the animal was used (as food, medicine, other?), / wou...	Strongly Opposed to finning	2	1	1	2	2	0	5	13
	Opposed to finning	2	8	7	2	0	2	5	26
	Indifferent	3	5	3	0	0	3	5	19
	In favor of finning	1	13	2	0	0	0	2	18
	Strongly in favor of finning	1	0	0	0	0	0	1	2
6 If shark finning practices / negatively affected other commercially important species, would you be:	Strongly Opposed to finning	5	11	6	3	0	1	7	33
	Opposed to finning	3	10	6	1	1	4	8	33
	Indifferent	0	5	1	0	1	0	1	8
	In favor of finning	1	1	0	0	0	0	1	3
	Strongly in favor of finning	0	0	0	0	0	0	0	0
7 If finned sharks were fished from demonstrated healthy shark populations, would you be:	Strongly Opposed to finning	3	2	2	0	0	0	3	10
	Opposed to finning	2	10	4	1	0	1	8	26
	Indifferent	1	5	4	1	2	4	5	22
	In favor of finning	2	10	2	1	0	0	1	16
	Strongly in favor of finning	1	0	1	1	0	0	0	3
8 Have you ever eaten shark fin soup?	Yes	8	24	10	2	1	3	10	58
	No	1	3	3	2	1	2	7	19
9 How many times have you eaten shark fin soup?	Never	1	4	3	2	1	2	7	20
	1 time	0	1	2	0	0	1	2	6
	2-5 times	4	4	2	1	1	0	7	19
	5-10 times	0	4	1	1	0	0	1	7
	10-15 times	2	0	2	0	0	2	0	6
	More than 15 times	2	14	3	0	0	0	0	19
10 How has your consumption / of shark fin soup changed over the past five years?	Increased a lot	1	0	0	0	0	0	1	1
	Increased a little	0	1	0	1	0	1	1	4
	Stayed the same	3	12	7	2	1	2	7	34
	Decreased a little	0	4	2	0	1	0	1	8
	Decreased a lot	5	10	4	1	0	2	8	30

11. If the frequency of your / consumption has decreased over the past five years, is it due to? Please ch	Availability	2	7	1	0	0	2	1	13	
	Lack of interest	2	2	0	0	1	0	4	9	
	Pressure from family	0	1	1	0	0	0	1	3	
	Pressure from friends	0	1	0	0	0	0	1	2	
	Environmental concerns	3	8	4	1	1	0	5	22	
	Higher price of shark fin soup	1	7	3	0	0	2	3	16	
	Other	Vowed to never ha No specia								
	Frequency stayed the same	2	5	2	2	1	1	3	16	
	Has not decreased	2	4	4	1	0	1	0	12	
12. If the frequency of your / consumption has increased over the past five years, is it due to? Please ch...-Availability	Availability	0	1	0	0	0	0	1	2	
	Increase in interest	0	1	0	0	0	0	1	2	
	Family occasions	0	1	1	0	1	1	2	6	
	Lower price of shark fin soup	0	0	0	1	0	1		2	
	More disposable income	0	1	1	0	0	0	1	3	
	Other	1 party								
	Frequency stayed the same	2	5	2	2	1	1	10	23	
	Has not increased	7	19	11	1	0	2	2	42	
	13. On what occasions or / celebrations have you eaten shark fin soup? Please choose all that apply. -Wedding	Wedding	5	20	5	0	0	2	7	39
Birthday		0	13	2	0	0	1	0	16	
Festival/Holiday		5	13	6	2	1	1	3	31	
Business function		2	7	2	1	0	1	0	13	
Anniversary		0	2	1	0	0	1	0	4	
Retirement		0	0	0	0	0	0	0	0	
Other		0 family din family get								
I have never eaten shark fin soup		1	3	3	2	1	1	6	17	
14. Where have you eaten shark / fin soup? Please choose all that apply. -At home		At home	2	5	7	0	0	0	0	14
	Restaurant	8	24	9	2	1	3	10	57	
	Catered events	2	3	3	0	0	0	0	8	
	Other	0	0	0	0	0	0	0	0	
	I have never eaten shark fin soup	1	3	3	2	1	2	7	19	
15. Do you like the taste of shark fin soup?	Yes	4	16	4	1	0	3	2	30	
	No	2	0	1	0	1	0	2	6	
	Indifferent	2	8	5	1	0	0	6	22	
	I have never eaten shark fin soup	1	3	3	2	1	2	7	19	
16. The consumption of shark / fin soup is an important cultural tradition in my family.	Strongly Agree	1	3	3	0	0	0	0	7	
	Agree	4	8	3	0	0	0	1	16	
	Neither Agree nor Disagree	0	6	2	0	2	0	3	13	
	Disagree	2	4	1	1	0	3	8	19	
	Strongly Disagree	2	6	4	3	0	2	5	22	
17. The consumption of shark / fin soup is an important cultural tradition to me.	Strongly Agree	0	2	1	0	0	0	1	4	
	Agree	2	7	1	0	0	0	1	11	
	Neither Agree nor Disagree	1	6	2	0	2	1	2	14	
	Disagree	3	5	3	0	0	2	7	20	
	Strongly Disagree	3	7	6	4	0	2	6	28	
18. Please specify your age range.	18-21	2	0	1	0	0	0	3	6	
	22-34	6	15	11	3	1	3	8	47	
	35-44	1	2	1	1	1	1	4	11	
	45-54	0	6	0	0	0	1	1	8	
	55-64	0	4	0	0	0	0	1	5	
	65 and over	0	0	0	0	0	0	0	0	
19. Please specify your gender.	Male	7	14	6	2	1	1	4	35	
	Female	2	13	7	2	1	4	12	41	
	Rather not say	0	0	0	0	0	0	1	1	
20. Which category best / describes your current status?	Immigrant, temporary visa	0	1	2	3	1	3	1	11	
	Landed immigrant (green card)	1	0	1	0	0	1	11	14	
	Immigrant, naturalized US citizen	0	7	5	1	1	1	4	19	
	First generation US citizen	3	10	5	0	0	0	0	18	
	Second generation US citizen	3	4	0	0	0	0	1	8	
	Third generation US citizen	2	5	0	0	0	0	0	7	
	Other	0	0	0	0	0	0	0	0	

