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The Feasibility for Providing a More Sustainable Menu in Hong Kong's Seafood Businesses

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Executive Summary

The world's fish and seafood production has grown exponentially in the last few decades, reaching an all-time high of 143 million metric tons, valued at 208 billion USD (FAO, 2008, Summary Tables). About 80 percent of this harvest is used for human consumption. If these current patterns continue, then all commercially fished seafood may be completely depleted as early as the year 2050 (Bon Appétit Management Company, 2007).

Hong Kong Special Administrative Region (SAR) of the People's Republic of China (PRC) is recognized for having the best and most expensive seafood dining in the world. It also is noted for having four times the world's average consumption of fish and fishery products with 67 kilograms per person each year (FAO, 2008, Summary Tables). Their seafood culture is rich and abundant, and businesses play an enormous role in reinforcing this fact. Hong Kong is home to over 1300 restaurants and hotels that include seafood in their menus, however, the ones that provide sustainable seafood options are limited (Openrice Group Inc., 2010). Seafood has long been an integral part of Chinese culture, and the high demand for it results in businesses actively trying to meet consumers' needs. However, this often leads these businesses to overlook the environmental impacts of unsustainable fishing practices when deciding what fish and/or seafood to provide. It is important to review seafood businesses in addressing seafood sustainability problems.

The purpose of this project is contact some of the key seafood stakeholders in Hong Kong, that is, hotels and restaurants, and establish whether or not offering a more sustainable seafood menu is feasible for those businesses. In cooperation with the WWF-Hong Kong and

under the guidance of Conservation Marine Officer, Dr. Allen To, our team will conduct interviews and surveys with popular and targeted hotels and restaurants to determine the key factors that will determine the feasibility of selling more sustainable products in Hong Kong's hotels and restaurants, such as what is involved in their fish and seafood purchasing decisions. We will be able to determine what needs to be done by conservation organizations in order to educate and influence restaurant and hotel managers to offer sustainable seafood on their menus. Our team will also analyze the businesses that already provide sustainable seafood options and identify what has contributed to their successful transition to a more sustainable menu. Additionally, the survey will evaluate businesses' knowledge of sustainable seafood. Without an adequate amount of education, it would make the transition nearly impossible. Conservation organizations, like WWF-Hong Kong, will then be able to utilize this information and develop educational prototypes for hotels and restaurants to be more aware of the environmental consequences that occur from their seafood choices.

Chapter 1: Introduction

In the last 30 years, the total amount of freshwater fish and seafood produced worldwide has almost tripled, reaching up to a reported 143 million metric tons, valued at 208 billion USD (FAO, 2008, *Summary Tables*). About 80 percent of this produce is used for human consumption. If these current patterns continue, then all commercially fished seafood may be completely depleted as early as the year 2050 (Bon Appétit Management Company, 2007). In order to prevent the degradation of the world's aquatic ecosystems, sustainable practices in fish farming and harvesting need to be implemented. Addressing the sustainability of seafood involves not only considering consumers' attitudes, but more importantly the viewpoint of the distributors, such as hotels and restaurants, that directly provide the seafood to consumers.

Hong Kong SAR, PRC, has four times the world's consumption of fish and fishery products per capita, with 67 kilograms per year (FAO, 2008, *Summary Tables*). The region imports an average of 550 thousand metric tons in live weight of seafood each year, while its exporting figures are less than half that amount. Recognized for having the best and most expensive seafood dining in the world, Hong Kong's seafood culture is rich and abundant, and businesses play an enormous role in reinforcing this fact. There are over 1300 restaurants and hotels in Hong Kong that include seafood in their menus. However, the ones that provide sustainable seafood options are limited (Openrice Group Inc., 2010). Seafood has long been an integral part of Chinese culture, and the high demand for it results in businesses actively trying to meet consumers' needs. However, this often leads these businesses to disregard the environmental impacts of unsustainable fishing practices when deciding what fish and/or seafood to provide. Eighty-one businesses in Hong Kong, including, but not limited to, private

institutions and companies, have supported and pledged to WWF-Hong Kong (2010, Companies say NO to Shark Fin) to take sustainability initiatives by not selling or buying shark fins.

However, there are no restaurants or hotels on that list.

Providing environmentally friendly fish and seafood really comes down to the supply and demand process. In Hong Kong, most fish and seafood go through a common supply system, starting from their capture, on to distributors and/or processors, then retailers, and ending in the hands of consumers. This system has followed a certain pattern for many years so trying to change any of the steps is difficult. However, it is more feasible to influence the demand (i.e. consumers and suppliers) of fish and seafood to alter the flow of products within the system. In 2008, a team of WPI students conducted a survey sponsored by WWF-Hong Kong, in which they focused on consumers' key considerations when buying sustainable seafood (Boulanger, DeMott, Nikitas, & Patchel, 2008). In their research, they found that many consumers had heard of eco-friendly fish and seafood but did not consider the health of the environment as an important criterion when buying a fish product; some admitted to not knowing what constituted seafood as being sustainable or unsustainable. With suppliers, many conservation organizations, such as the Blue Ocean Institute and the Marine Stewardship Council (MSC), have created programs to educate and encourage retailers to provide more sustainable menus. A number of organizations even provide eco-label certifications to promote sustainable seafood within seafood businesses (Blue Ocean Institute, 2010; Marine Stewardship Council, 2010).

However, these programs are not as widely advertised among retailers as the conservation organizations had hoped. For example, most of the MSC-certified businesses in China and Hong Kong are wholesale fish suppliers (Marine Stewardship Council, 2010, *Find a Supplier*). However, so far only two supermarkets are selling MSC-certified products, with six

items in each supermarket (*Where to Buy*). It seems that not many retailers are involved with such organizations, and it is important to understand why. It is necessary to identify the motives that influence the types of fish and seafood products they sell, for example, why they lean towards an unsustainable fish product versus a sustainable alternative.

Our research involves looking at retailers in Hong Kong, such as hotels and restaurants, to uncover the possible options that retailers might have when selecting their fish and seafood products while increasing the percentage of sustainable products they sell. In cooperation with the WWF-Hong Kong and under the guidance of Conservation Marine Officer, Dr. Allen To, our team will conduct interviews and distribute a survey with popular and targeted hotels and restaurants to determine the factors involved in their fish and seafood purchasing decisions. If retailers in Hong Kong can become advocates for sustainable seafood, then consumers may notice and follow their lead. Once this happens, one can expect to see a change in the types of seafood consumed in Hong Kong and, quite possibly, the natural marine resources may be able to flourish once more.

Chapter 2: Background

This chapter discusses the many aspects of the seafood trade system. Fish and seafood are a large part of Chinese culture and tradition, but due to increasing demands, much of the fish and fishery products sold in the market are considered unsustainable. As unsustainable can have a variety of definitions, this project focuses more on the precarious fishing and harvesting methods that contribute to the degradation of the world's marine ecosystems. In addition, we will describe the live and frozen/processed seafood trade system in Hong Kong, which involves wholesale fish markets, the distributors and the retailers. Laws, policies and campaigns developed to promote the sustainability of fish and seafood are also reviewed to elucidate actions taken in recent years to conserve aquatic ecosystems.

2.1 Seafood Culture

Today, seafood is more popular as the world is becoming more aware of the substantial health benefits that fish and seafood products have over other traditional protein sources such as red meat and poultry. According to the Fisheries Research and Development Corporation (2004), seafood has long been considered a low calorie, highly nutritious source of protein. It contains significant amounts of iodine, has low saturated fat content, and a variety of health-benefiting fats such as Omega-3 and Omega-6. Eating seafood has been found to reduce risks of many common diseases such as heart disease, high blood pressure, arrhythmia, diabetes, and even some types of cancer.

Thus, seafood consumption worldwide has been steadily increasing each year. According to Steven Hedlund (2010), editor of *The Seafood Source*, global annual seafood consumption in 2008 reached 143 million metric tons with an average per capita consumption of 17 kilograms.

This reported total consumption is an increase from 137 million tons in 2006. In China, the average person eats 3.6 times more seafood than the world's average per capita consumption (WWF, 2010). Consequently, having the largest population in the world, China is now the world's biggest seafood consumer, topping both Japan and the United States, as reported in 2010.

The Chinese have a tradition of consuming fish or seafood in their everyday meals. In the 7th century, Marco Polo witnessed the abundance of shrimp and other seafood in the Chinese diet (Gascoigne, 2001). This trend has continued until the present day and is putting a substantial strain on seafood supplies worldwide. Moreover, many of the traditional Chinese seafood dishes require “red-category” species as ingredients. “Red-category” refers to fish and other marine species that are “over-exploited, caught or farmed in an ecologically unfriendly way, or come from fisheries that are not well managed” (WWF, 2007, p.1). The following sections list some of the most popular seafood types or species in Chinese cuisine.

2.1.1 Shark Fins

Shark fin has been a delicacy in Chinese cuisine since the Sung dynasty (960-1279 AD) and was a “traditional component of formal banquets” (Clarke, 2004, p.56). Priced at over HK\$3100 (US\$400) per kilogram, shark fin is presently one of the most expensive seafood products in China. Its price and exclusivity makes shark fin very popular for high-class meals, which are becoming more common in China. Hong Kong is the main trading port for shark fin for Mainland China. Hong Kong's share of world imports is now between 50 and 80 percent (Clarke, 2004; Vannuccini, 1999), coming from 125 countries around the world (Parry-Jones, 1996). Since shark meat has a much lower demand because of the dangers associated with it (such as mercury contamination), the demand for only the fins drives shark fishing worldwide.

2.1.2 Abalone

Abalone has been an integral part of Chinese cuisine for more than two thousand years. During the Han dynasty (206BC-220AD), Emperor Liu Bang noticed fishermen eating abalone for the first time and incorporated it into the official Han dynasty cuisine (Clarke, 2004). Currently, while abalone is still widely consumed, its complex preparation requirements make dried and canned abalone the more popular forms for consumption in China. High-grade abalone products are imported from Japan, South Africa, the Middle East, and Australia, while lower grade products come from Indonesia and the Philippines. Although it is not recognized as an endangered species, abalone from South Africa is on the WWF (2007) seafood red-list due to many years of illegal commercial harvesting.

2.1.3 Dried Fish

In China, the main consumers of dried fish products are low income families or people from older generations (Clarke, 2004). Most of Hong Kong dried fish imports are from Mainland China, Bangladesh, Vietnam, India, Indonesia, Thailand, and Kenya. There are many types of dried seafood, some of which are on the WWF (2007) seafood red list, including Hairtail and Bigeye.

2.1.4 Live Seafood

Driven by their preference to consume the freshest seafood, Chinese consumers consider live seafood a luxury item. In Hong Kong, live seafood restaurants are abundant and located in many areas. Many of these restaurants maintain seafood tanks, from which individuals can select a live fish that will be prepared for the meal. Depending on the type of species, live seafood retails from HK\$40 to HK\$1400 per kilogram (Sadovy, 2003). Hong Kong's main sources of live seafood come from the coral reef areas in Southeast Asian countries such as Indonesia,

Philippines, Malaysia, Thailand, and Vietnam. Thus, many of the live seafood types from this area are listed on the WWF (2007) seafood “avoid” category due to fishing practices that are dangerous to the coral reefs. These live fish types include: hairtail, flathead, high-finned grouper, squaretail coral trout, and leopard coral trout (see Appendix D).



Figure 1 -Live fish tank in a seafood restaurant in Hong Kong (FoodNut, 2009)

2.2 Hong Kong's Geography

Hong Kong is located in the South China Sea at the mouth of the Pearl River Delta. It has 260 territorial islands and peninsulas that are divided into five main territories: Hong Kong Island, Kowloon Peninsula, New Territories, Lantau Island, and Sai Kung Peninsula (see Figure 2). Because of its central location among Southeast Asia, China, Korea and Japan (see Figure 3), Hong Kong has been the center of many of the world's biggest and most important maritime trading routes throughout its history. Hong Kong port is one of the busiest seaports in the world. Its total cargo throughput in the first half of 2010 is reported to be 130.0 million tons, with an inward port cargo throughput of 75.4 million tons and an outward cargo throughput of 54.7

million tons(Census and Statistics Department, 2010). Today, Hong Kong still plays a major part in China's seafood market as the majority of Mainland China's seafood is imported through its port (Clarke, 2004).



Figure 2 -Map of Hong Kong (Google, 2010)



Figure 3 - Hong Kong's Geographic Location in Asia (Google, 2010)

2.3 Unsustainable Seafood

As defined by the United Nations (1987), sustainable development implies “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (*Report of the World Commission on Environment and Development*). In regards to seafood, this includes the methods used to catch and process fish for consumers. In 2007, the Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations (FAO) (2010) reported the total world fishery production to be about 140 million metric tons, a 23 percent increase from ten years earlier.

This section reviews unsustainable fishing methods that are quickly depleting fish resources, damaging eco-systems, as well as the endangered and threatened species that are at risk and should be avoided altogether.

2.3.1 Overfishing

Overfishing is the exploitation of fish stocks and “occurs when they are caught faster than they can reproduce” (Giuliani et al, 2004, p. 1). It is a major concern and threatens the marine ecosystem, causing great declines in marine and mammalian species. Overfishing consists of two subtypes: growth overfishing and recruitment overfishing (Murawski, 2000).

Growth overfishing refers to the capture of fish and other marine life before they reach their optimal size. It involves taking “too many of a targeted species at too small a size” (Blakenship, *Signs of 'growth overfishing' seen in Bay's crab population*, 1998) to produce a maximum yield per recruit: you fish less but harvest larger catches. Gathering the fish much earlier than they should be reduces the value of the catch as they are much smaller and

weightless. In addition, there is not sufficient time for the fish to reproduce and their natural stock eventually decreases in size.

Recruitment overfishing is characterized by the “reduction of the spawning stock and coastal environmental degradation, which usually affects the size or suitability of nursery areas” (Pauly, 1988, p. 14). As a result of over-harvesting, there is a decrease in the number of adult fish that are capable of reproducing and thus replenishing the fish stock. Eventually, there will not be enough fish left to sustain their own population.

2.3.2 By-catch

As the majority of fish are caught in larger quantities nowadays, by-catch is more of a pressing issue. By-catch, which has existed since fishing first began, refers to the capture of fish species that are not wanted and are usually thrown away dead or dying (Hall, Alverson & Metuzals, 2000). The main reason for discarding a fish is because it is a non-targeted species or is not commercially viable. If that is not the case, the fish may be damaged, have spoiled, or just cannot fit due to the lack of space in the boat’s storage unit.

By-catch also includes the portions of the fish that are discarded at sea. For example, as referenced from Hoffard’s (2010) short film “Man & Shark,” shark-finning consists of catching a shark, de-finning it, and discarding the body back to the sea to let it die. The fins are considered the catch, and the rest of the shark is considered the by-catch.

2.3.3 Dynamite Fishing& Fishing with Poisons

Dynamite fishing, which is often illegal but still practiced in many countries worldwide, involves the use of explosives to harvest schools of fish. The explosives are intended to stun, but the fish are often killed due to the intensity of the blast, leaving some portion of the group dead

at the surface of the water and the rest sinking underneath (Guard, 1997). The most commonly used instruments are fish bombs, which are made with artificial (chemical) fertilizers mixed with kerosene (Komodo National Park, 2007). These bombs, depending on their size, also destroy the surrounding area, notably coral reefs where many schools of fish linger.

The most common poisons used in fishing are cyanide solutions which are “nominally illegal in virtually all Indo-Pacific countries” (World Resources Institute, 2010, *Cyanide Fishing: A Poison Tide on the Reef*). These poisons are not meant to kill fish but rather tranquilize them, which facilitates their capture (Komodo National Park, 2007). Like dynamite fishing, the cyanide eventually kills the surrounding ecosystem from continual exposure to this poison. Additionally, fishing with poisons, as well as dynamite fishing, poses threats to human lives in which numerous accidents and injuries can occur to both fishermen and bystanders.

2.3.4 Endangered and Threatened Species

As a result of unsustainable fishing practices, many fish species are becoming endangered. According to the IUCN Red List of Threatened Species, about 18 percent of fish are threatened, freshwater fish are contaminated more so than marine species (Baillie, Hilton-Taylor & Stuart, 2004). Although this would equate to a small amount because the number of species evaluated was much smaller than the number of described species (1,721 to 28,500), it is still a significant portion of the aquatic ecosystems. Unfortunately, marine species have been neglected by extinction risk assessment until recently, which is the reason a full list of threatened fish is yet to be produced. Moreover, many species of fish and seafood are not considered edible for various reasons, for example, venomous and poisonous fish.

2.4 Hong Kong's Seafood Trade System

The high demand for seafood in Hong Kong is indicated by “one of the highest per capita consumers (17 kg/person/yr) of seafood in the world” (Hedlund, S., 2010). Local fisheries have been facing an uncertain future due to depleted fish stocks in Hong Kong waters and the associated destruction of the marine system, branding fishing as a “sunset industry” or declining industry.

In order to supplement the local seafood industry to keep up with consumers' demand, about 80% of the fresh seafood consumed in Hong Kong is imported by sea or air (Wilson, 2002, p. 158). All live seafood imported to Hong Kong is required to go through several traders (wholesalers, distributors, and sales services) before it reaches the retailer. Most retailers buy seafood from wholesalers to control Hong Kong's seafood market distributions to consumers. Seafood restaurants, hotels, supermarkets or other merchants serve as the supply chain middlemen. As a seafood researcher notes, “a well-developed relationship among the importers, wholesalers, and seafood restaurants is clearly seen in live reef fishing trading in Hong Kong” (Chan, P. S., 2001a, p. 201). Additionally, Hong Kong offers “a trading environment with zero tariffs and zero taxes for seafood imports” (Chan, M. C., 2009, p. 3), which links major opportunities in the seafood market relationships between Hong Kong and Mainland China as well as other exporting countries. In 2009, Hong Kong's seafood market, including live and any other aquatic products, was valued at HK\$21 billion, with about 30% of the imports being re-exported; the major re-export markets being China and the United States.

Presently, Hong Kong does not have an official or mandatory safety standard for food imports. Live marine seafood is allowed to be exempt from a health certificate (Center for Food Safety-Hong Kong, 2010, *Import Control/Export Certification*). However, any chilled or frozen

seafood is required to have a health certificate. “All crayfish and shellfish require health certificates and the original copy must be attached to the cargo” (p. 199).

Hong Kong is very prominent for obtaining the highest quality products from all over the world and promoting them to customers. Despite Chinese suppliers from Mainland China having the advantage of being geographically close to Hong Kong, the increasing number of food safety incidents in China has driven Hong Kong consumers to pay more attention to alternative aquatic products with better track records (Chan, M. C., 2009, p. 4).

“Consumers' preference for fresh and live fish and seafood products, and the use of dried products also add to the range of fish and seafood products available in the market” (Chan, M. C., 2009, p. 4). In 2008, most of Hong Kong's seafood imports came from Japan due to its high quality dried fish products such as abalone and scallops. Japanese fish products account for 15 percent of Hong Kong's seafood market, followed by Australia, China, and the United States with 11.4, 10.7, and 5 percent, respectively (p. 5). Of these importers, Australia offers Hong Kong the highest valued live seafood, including crayfish, abalone and coral fish, and China offers significantly lower valued seafood products.

2.4.1 Live Seafood Supply Chain

Live seafood culture has prompted the growth and expansion of Hong Kong's market system for live seafood trade. Typically, there are four channels in Hong Kong's live seafood supply chain; importers, distributors, sub-distributors and retailers (Tsui, 2010). Seven wholesale fish markets operated by the Fish Marketing Organization dominate live seafood distribution in Hong Kong. These markets are located in Aberdeen, Shau Kei Wan, Kwun Tong, Cheung Sha Wan, TuenMun, Tai Po and Sai Kung (refer to Figure 4).



The Locations of Fish Markets:

- 01-Aberdeen
- 02-Shau Kei Wan
- 03-Kwun Tong
- 04-Cheung Sha Wan
- 05-Tuen Mun
- 06-Tai Po
- 07-Sai Kung

Figure 4 - Seven Major Fish Markets in Hong Kong SAR, PRC (Fish Marketing Organization, 2006, Home)

Live seafood products, imported from places such as Shenzhen, Guangzhou, Japan, and Australia, are stored in the wholesale markets in Styrofoam boxes. The roles of distributors and sub-distributors are based on the access to clients and the relationships with retailers. “Those who have access to sales channels and [maintain] good relationships with retailers, but are unable to obtain products from the top of value chain, act as middle men; they employ sub-distributors on a case-by-case basis between themselves and retailers” (New Zealand Trade & Enterprise, 2010, p. 5). However, many retailers in Hong Kong prefer to directly purchase and import live seafood to replenish their stocks. A schematic of Hong Kong’s live seafood supply chain process is shown in Figure 5 below.

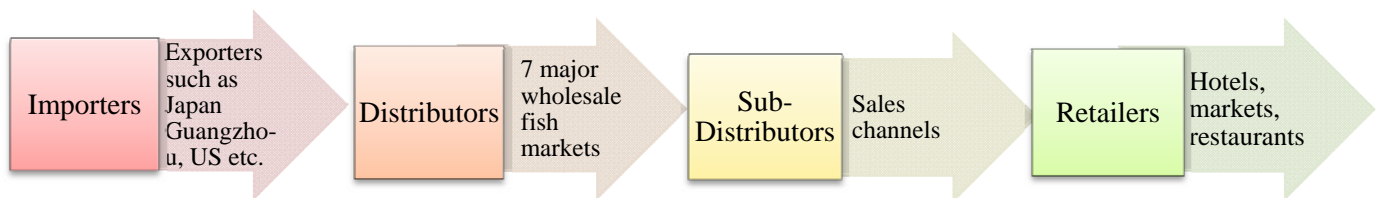


Figure 5 - Live Seafood Supply Chain in Hong Kong (Adapted from Tsui, 2010; New Zealand Trade & Enterprise, 2010, p.6)

2.4.2 Frozen and processed (dried) Seafood Supply Chain

Though Chinese consumers traditionally prefer live seafood, the preference for frozen or processed seafood has been increasing. Along with the rising population of mainland Chinese workers who favor processed and non-perishable seafood, “rising incomes, increased ownership of fridges and freezers, more exposure to western and international cuisine, and a greater array of retail goods” all increase the sales of frozen and processed seafood in Hong Kong seafood market (New Zealand Trade & Enterprise, 2010, p. 6). According to Candace Tsui (personal communication, November 3, 2010) who works for the Fish Marketing Organization, the traditional consumption pattern of live seafood is changing to fit the fast lifestyle of Hong Kong residents. Frozen and processed seafood products, including processed fish, shellfish, shrimp and prawns, are therefore becoming more popular to the consumers due to their shorter preparation times.

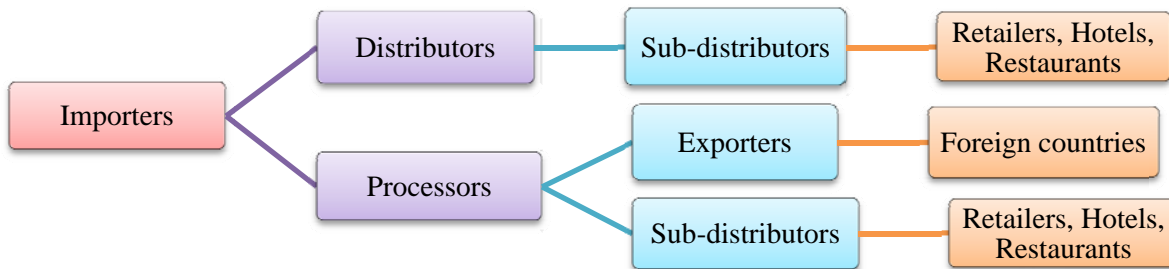


Figure 6 - Frozen and Processed Seafood Supply Chain in Hong Kong
(Adapted from Tsui, 2010; New Zealand Trade Enterprise, 2010, p.9)

There are three main channels in the frozen and processed seafood supply chains, which have a few different steps from the live seafood system. A diagram of the frozen and processed seafood supply chain process is shown in Figure 6. Fishermen unload their frozen seafood either at the seven major fish wholesale markets or at the processors’ facilities. It is estimated that as

much as 60%-75% of frozen seafood imported to Hong Kong is directed to processing facilities and is then re-exported (The China Seafood Market Overview, 2010, p. 6). More sub-distributors must link in the supply chain due to “longer shelf lives and larger geographic distribution coverage” (New Zealand Trade & Enterprise, 2010, p. 6). A number of sophisticated seafood sale channels and retailers help promote branded, processed seafood products to the young and wealthy in Hong Kong, who generally prefer to shop in supermarkets rather than wet markets.

2.4.3 Distributors

The seven major wholesale fish markets adopt the distributor roles in both live and frozen/processed seafood supply chain systems. The live seafood trade system has been maintained since the local fishery decline in 2005. However, “operators with a chain of restaurants have bought fish directly from the wholesalers in the recent two or three years. This situation was not seen in the past and now restaurant operators have to take whatever means possible to cut operating costs” (Chan, P.S, 2001a, p. 201). Many buyers have the impression that the price paid for live seafood from wholesalers is remarkably low because fishermen and wholesalers want to sell their seafood as quickly as possible to reduce the mortality rate of their stock.

Chan (2001) explained, “Wholesalers normally settle the payment with the importers within one week after the sale, unless the importers need to stay in Hong Kong for urgent repairs of their live carriers” (p. 202). Many wholesalers are not interested in selling small quantities of their products, though many customers find it more convenient to visit the wholesalers’ booths, select the seafood products they need, and pay with cash, rather than keeping a tab (New Zealand Trade & Enterprise, 2010, p. 8). Large volumes of orders for hotels or restaurants are delivered

daily or over the course of a few days throughout the week. The deliveries are usually billed weekly or monthly according to agreed terms.

2.4.4 Merchants, Hotels, and Restaurants

Nowadays, consumers can have seafood from all channels of the trade systems, including private, public or collective stores, processing companies, supermarkets, wet markets, restaurants and hotels or even fishermen themselves. More seafood choices for consumers, in terms of the price, qualities and services, are available as the competition has risen among different retailers. Most of the seafood goes through at least two separate channels (importers, distributors and/or sub-distributors) before being sold to the consumers.

As explained in a report of National Oceanic and Atmospheric Administration (National Marine Fisheries Services, 2010, *Marketing and Trade*), many retailers, especially the government-owned or collective stores, do not specialize only in the sale of seafood but retail a wider variety of products. The private sector/restaurants have played a relatively more important role in the retail structure as they provide a better representation of seafood in terms of prices, qualities and services. Supermarkets have developed rapidly in recent years and will be expected to take a larger and larger share of the seafood market. Most catering services such as restaurants, hotels, hospitals, schools, etc., obtain their seafood supplies from wet markets and wholesale markets. Our research will take a closer look at hotels and restaurants in Hong Kong.

In Hong Kong, live seafood is sold to more than 170 hotels and 681 restaurants (Allen To, personal communication, November 15, 2010). “There are four prime seafood locations for waterfront dining-Sai Kung, Lei YueMun, and the islands of Lamma and Cheung Chau” (Hong Kong Tourism Board, 2010, *Seafood*). Purchasing fresh-caught seafood that is held in tanks and

prepared using gourmet cooking methods and appetizing flavors is one of the culinary arts found in Hong Kong restaurants. As a rule of thumb in Cantonese cuisine, the freshest seafood is always odorless and best cooked by steaming with light seasoning.

2.5 Promoting Sustainability

Diminishing supplies of resources, along with a growing demand for seafood have led to an increasing number of sustainable seafood campaigns worldwide (Jacquet&Pauly, 2010). Campaigns formed by marine conservation organizations have been primarily geared towards raising the public's awareness of sustainable seafood issues through seafood guides and eco-labeling techniques. Organizations have also begun recognizing that major stakeholders, such as restaurant and hotel owners, need to provide more sustainable seafood to their customers. To achieve the goals, organizations must influence these stakeholders purchasing decisions and provide necessary resources and support. This will allow the chefs to incorporate more sustainable seafood products into their menus, while still maintaining good economic and social standing.

2.5.1 Eco-labeling Campaigns

Utilizing eco-labeling is one technique for promoting sustainable seafood that has been stressed by many organizations globally. Generally, eco-labels show that the product is being sold with environmental sustainability in mind. In terms of policy, eco-labeling strives to educate consumers on the environmental effects involved with purchasing or consuming a certain species of fish (Jacquet&Pauly, 2010). From a business perspective, companies use eco-friendly labels to try to expand their customer base and therefore increase their profit. Historically, one of the most recognized eco-labeling initiatives took place in the 1990's with the "dolphin safe" logos on tuna cans. Similar to other consumer guides, eco-labeling has not produced the results that

organizations have intended; mainly due to a lack of specific and supportive government policies and the inability to trace seafood back to its original source. Organizations have realized that unless the eco-labeling program is mandatory and enforced by government agencies, participation will be limited because fisheries will only use the labeling techniques if they benefit from it. Additionally, because conservation organizations lack the ability to track the origins of fish being sold by wholesalers, many fish and seafood retailers have begun labeling their seafood as “eco-friendly”, when in fact the products are not. For instance, using DNA testing, researchers have found that of all the red snapper fish being sold in the U.S, nearly three-quarters of it actually belongs to a different species. Until fish can be accurately sourced back to their original location, fish exporters will not be held accountable and eco-labeling techniques will not be accurate and will provide false species identifications to consumers.

2.5.2 Addressing Stakeholders’ Purchasing Decisions

Marine conservation organizations across the United States and Canada have begun taking action to address seafood sustainability concerns involving restaurants. The most highly recognized organizations joined together in 2008 to form the Conservation Alliance for Seafood Solutions (2010, *Who We Are*). Amongst their many goals, these fifteen organizations look to help companies understand various certification and eco-label models, and educate catering businesses on methods that raise consumer demand for sustainable seafood products with a more sustainable menu.

Blue Ocean’s Institute

Blue Ocean Institute is a primary example of an organization that has taken immediate action to encourage restaurants to implement sustainable seafood practices (Conservation Alliance for Seafood Solutions, 2010). Through their sustainable seafood course entitled “*Green*

Chefs, Blue Oceans”, they have been able to educate chefs and culinary students about all aspects of sustainable seafood within industries and how to properly provide new sustainable seafood options on their menu. This sustainable seafood course has equipped its members with tools to “purchase, prepare, and promote sustainable seafood in their kitchens and restaurants,” (Blue Ocean Institute, 2010, *Green Chefs*). Essentially, Blue Ocean Institute has designed separate courses for culinary students and professional chefs. Both courses consist of seven major components: an introduction to sustainable seafood, wild finfish, farmed finfish, shellfish, local/regional/imported seafood, sustainable seafood in your restaurant, and menu design. Following a step-by-step interactive program, the registered participant must complete each of these components in a sequence. Upon completion of the course, they should have a full understanding of the key concepts of sustainable seafood, and a thoroughly aware of novel methods to make chefs “sustainability minded”. The program also includes multiple interviews with chefs from across the worlds who have already introduced sustainable seafood in their kitchens. This enables participants to gain insight into paths employed by some restaurants to transition to sustainable seafood. Finally, during the course’s closing phase, it allows participants to create new sustainable seafood menus based on the information that they have learned throughout the course.

Overall, this course can be an important tool in teaching chefs around the world to provide sustainable seafood alternatives. It covers all aspects ranging from basic knowledge, to the restaurants working with customers such that everyone is satisfied with the sustainable seafood choices. If the program is completed correctly, the participant acquires all the necessary tools to make future purchasing decisions that will be sustainable and beneficial to their business.

In addition to educating chefs and students through their online course, Blue Ocean Institute also offers technical advice and assistance to restaurants that are members of their organization (Conservation Alliance for Seafood Solutions, 2010). This facilitates existing restaurants in implementing sustainable seafood menus and to utilize Blue Ocean Institute's services on a continuing basis to keep improving their seafood purchasing decisions. Lastly, the Blue Ocean Institute hopes to build a sustainable seafood community where partnerships can be formed to achieve sustainable goals. With the creation of such partnerships, restaurants can share opinions and transform to environmentally friendly purchasing decisions.

Fish Wise

Fish Wise (2010) is another organization that has addressed purchasing decisions of restaurants with regard to sustainable seafood. Fish Wise offers numerous services for a wide array of businesses throughout the seafood industry (*Our Services*). Fish Wise recognizes the difficulties that restaurants face when it comes to providing sustainable seafood while maintaining a successful and profitable business. It has thus become Fish Wise's main focus to work with retailers to ensure their businesses continuously generate profit while being environmentally responsible. Fish Wise starts off reviewing a business' inventory, and then organizing the different products into recognizable groups according to sustainability criteria. This allows customers of these businesses to make more informed decisions on the seafood that they purchase from a specific retailer. Fish Wise believes that if the customer realizes that a business is trying to be environmentally friendly in their menu options, then it will increase the trust and loyalty that the customer has in that business. This should, in turn, boost sales and profit for the restaurants. Another way that Fish Wise attempts to boost sales is by working closely with the restaurants in advertising methods such as brochures, marketing campaigns, in-store

events, and seafood business publications. By working with them to promote their sustainable seafood products, it forces the restaurants to make a commitment to sustainable seafood while simultaneously increasing the business' overall visibility.

Fish Wise (2010, *Our Services*) has also made a commitment to keeping the entire staff of businesses well educated and properly trained. The primary means of educating the staff has been through online and personal training. They provide educational supplements such as information binders, species flow charts, and other simple materials so that the entire staff is knowledgeable about seafood sustainability. The principle reason for keeping the staff well informed is so that if customers have any questions about the new sustainable seafood menus, the staff will be ready and able to answer them with confidence. This will persuade customers that the business is dedicated to being environmentally friendly and is dedicated to making a difference. In addition, Fish Wise provides access for businesses to Fish Choice, which is an online database of seafood products that are considered to be highly sustainable. This makes it much easier and time efficient for restaurants to choose the products that will best meet sustainability requirements. Restaurants can make their purchasing decisions based on the wide variety of seafood options that are provided through this database. This is an essential component to the Fish Wise program because stakeholders often want to make sure that the transition to more sustainable seafood products is easy and does not slow up their purchasing process.

Monterey Bay Aquarium

The Monterey Bay Aquarium (2010, *Restaurant Program*) has initiated a Seafood Watch Restaurant Program that deals with restaurant owners and their seafood purchasing decisions. If a restaurant chooses to participate in the program, it agrees to not serve seafood that is placed on the "avoid" list by the Aquarium in their version of a seafood guide. In order to help businesses

achieve these goals, the Monterey Bay Aquarium provides restaurants with educational materials on sustainable seafood and will answer any questions that staff members have regarding this issue. In order to help businesses make decisions on menu options, they also provide numerous sustainable seafood recipes that restaurant owners can utilize. The recipes often include testimonials from chefs that have experimented with a variety of dishes to show that customers are equally as satisfied with the menu even if it includes more sustainable options. As an incentive, restaurants that choose to participate in the program receive highly valuable recommendations from the Monterey Bay Aquarium through media coverage and other promotions. Restaurants also receive a plaque to show customers that they are a Seafood Watch Program Participant.

New England Aquarium

Similar to Monterey Bay, the New England Aquarium (2010, *Sustainable Seafood Advisory*) works with large retailers including restaurants to encourage the use of sustainable seafood by their companies. Initiated in 2000, their corporate sustainable seafood program has partnered with retailers across the mid-Atlantic region to incorporate environmental standards into their seafood purchasing decisions. They have also advised these companies on implementing useful sourcing policies and practices to ensure that their seafood products are environmentally friendly. The New England Aquarium stresses many benefits to its participants, so that they can remain confident in their decision to provide more sustainable seafood. Besides the obvious benefit of helping the fight against declining marine resources, the New England Aquarium also hopes to show participants that by branding themselves as “environmentally responsible”, they will gain a competitive edge over other businesses. They ensure that the company’s products will not decrease in quality and will gain additional value by being

sustainable. Along with these economic benefits, participating businesses gain access to the following services:

- Detailed sustainability information and purchasing recommendations for individual seafood species.
- Support during the implementation and integration of purchasing recommendations.
- New and ongoing research and reports specifically tailored to the company's needs.
- Training opportunities for point-of-purchase staff and managers
- Assistance and support with the development of public outreach materials, including consumer brochures, annual reports, and web-based publications.
- Aid in communication program findings and company actions to a broad range of audiences, from the media to the environmental community, and in a diverse setting, from internal meetings to global conferences and tradeshow.
- Support in developing metrics for monitoring purchasing practices and buying specifications to quantify the program's impact within the company.
- Support in navigating the environmental advocacy community
- Access to staff of skilled professionals with extensive experience working on sustainability and environmental responsibility from a scientific and conservation perspective (*Services and Benefits*).

The above mentioned services and benefits address everything that a business would want in implementing a sustainable seafood program. With its variety of benefits, the New England Aquarium (2010) has addressed everything from purchasing advice to educational services. Their in-depth program guides seafood businesses in the transition to sustainable seafood throughout the entire process. It is crucial that future sustainable seafood programs closely resemble the New England Aquarium's programs, because it reduces uncertainty among the restaurant managers and ensures that the program is conducted in a way that protects both the environment and the businesses' economic and social status.

Conservation Organizations in Hong Kong

WWF-Hong Kong (2010) has initiated many programs in recent years to help address the seafood sustainability problem that Hong Kong faces. In 2007, WWF-Hong Kong (2007) founded the Seafood Choice Initiative, which is composed primarily of a seafood guide, created

to inform residents of seafood options that relate specifically to the species consumed in Hong Kong. The initiative “clearly outlines recommended and [to be avoided] seafood items and how to identify sustainably sourced marine products” (*Seafood*). To make their guide more consumer friendly, WWF-Hong Kong listed sixty-seven of the most common types of seafood consumed in Hong Kong and separated them into three categories: recommended, think twice, and avoid. The “recommended” section suggests species that are considered sustainable and fine to eat. These types of fish are either farmed using responsible aquaculture practices or are supplied by well-managed fisheries. Meanwhile, if the consumption of a certain species of fish has the potential to impact the environment or further add to its sustainability concerns, then it is listed under the “think twice” category. Consumers are advised to conservatively order or consume these species of fish. The species of fish that the WWF-Hong Kong is most concerned about are species that are overfished or caught or farmed using methods that negatively affect the environment. Appendix D lists the specific species of fish that have been placed in each category in the seafood guide. WWF-Hong Kong (2010) worked closely with the Marine Stewardship Council (MSC) when constructing the Seafood Choice Initiative.

In addition to the Seafood Choice Initiative, WWF-Hong Kong (2010) has implemented a “shark initiative” that hopes to address the issues behind Hong Kong’s high shark consumption, and in particular the consumption of products such as shark fin. Over the past decade, the list of endangered shark species has grown eight-fold, making shark species a primary focus of the WWF. To properly execute the shark initiative, WWF works closely with catering companies and other seafood corporations in Hong Kong. In early 2010, WWF-Hong Kong developed an “Alternative Shark-Free Menu” that helps caterers by providing environmentally friendly alternatives to shark seafood. WWF-Hong Kong also realizes that shark fisheries are a tough

target on which to enforce regulations, so they focus on asking consumers to completely avoid eating shark fins, especially at banquets and restaurants.

Many other existing programs in the Hong Kong region have taken steps to improve seafood sustainability. The Marine Stewardship Council (MSC) was founded in 1997 from ideas and initiatives of WWF and Unilever that seek to establish rewards for well managed fisheries. (Leadbitter, Gomez & McGilvray, 2009). Originally, the MSC's primary focus was to find a feasible strategy to incorporate economics and ecology into seafood programs. Eventually, it put a majority of its attention towards an eco-labeling program with a governing body that oversees it. The MSC has also implemented a curriculum that accredits independent bodies to evaluate fisheries and determine if they are practicing sustainable fishing methods. In order to identify whether or not a fishery is practicing sustainable techniques, the MSC developed a "Principles and Criteria" (p.2) document that came from a two-year research program that involved industries, fishery managers and environmental groups. Currently, the MSC has certified several fisheries, while many others are working towards getting certified.

Living Seas Hong Kong (2010, *About Us*), another local organization comprised of Hong Kong residents concerned with the depletion of marine resources, is working to implement local protection programs and policies to improve Hong Kong's marine ecosystem. Their comprehensive program also exposes the lack of government policies in place to protect the marine ecosystems and promotes the consumption of sustainable seafood. In addition, Living Seas Hong Kong is trying to establish marine reserves in Hong Kong that will promote the recovery of certain fish species. Living Seas Hong Kong has also taken steps to address seafood sustainability problems within retail businesses and is enthusiastic to work with them to improve their seafood purchasing decisions. In order to carry out and address their organization's key

foci, Living Seas Hong Kong is willing to work in cooperation with legislative and other governmental bodies.

2.5.3 Laws and Policies

One major contributing factor to the sale of unsustainable seafood is that often times, certain species of seafood are sold under multiple identities at restaurants and hotel chains. Besides being an act of fraud to the consumer, this makes it increasingly hard for consumers to utilize seafood guide resources because sometimes the same species of seafood is being sold under multiple names. The United States Congress has began implementing polices to address such issues of mislabeled seafood to ensure that consumers are fully aware of the species origin and quality (Buck, 2010). The most critical policy that has been instituted is the Federal Food, Drug, and Cosmetic Act (FFDCA), which aims to keep interstate commerce free of mislabeled food products. This act not only regulates seafood that is being imported and exported from the U.S, but also places strict regulations on retailers and puts them under a legal obligation to advertise their seafood products as the correct and intended species. If retailers fail to advertise their products correctly, they face criminal prosecutions administered by the Food and Drug Administration. Individual states such as Alaska and California have implemented altered versions of the FFDCA to add additional regulations that address the mislabeling of species that are falsely advertised in their respective states. Although much of the reasoning behind the FFDCA is to protect consumers from fraud, it consequently helps the fight against unsustainable seafood by making consumers more aware of the species of fish that are being served by retailers.

The WWF (2010, *What We Do*) has also been pressuring local governments worldwide to take affirmative action when it comes to implementing new laws and policies that will support

sustainable seafood practices. WWF has supported strengthening government policies that reduce fishing capacity, along with laws and policies that fight illegal fishing.

WWF (2010, *What We Do*) realizes that in order for fish to become more sustainable, the overall fishing capacity must be reduced to allow species to replenish themselves. The main method in which the government can control capacity is by regulating the number of commercial fishing boats allowed in Hong Kong's waters. The government can reduce this fishing capacity by limiting the number of subsidies that are provided to commercial fisherman. These subsidies help maintain a healthy fishing community, but the money that has been provided to commercial fisheries has "artificially sustained more fishing vessels than the oceans can sustainably support" (*Perverse Subsidies*). To address this problem, WWF formed the "Stop Overfishing" campaign that encourages local governments to stop providing subsidies for building new boats and modernizing old ones. Since this campaign began, Hong Kong has worked in cooperation with the World Trade Organization to eliminate subsidies given to fisheries for such purposes (Bigdeli, 2007).

In addition to reducing fishing pressure and capacity, WWF (2010, *Curbing Illegal Fishing*) has been supporting laws that fight illegal fishing. WWF is willing to get pass the Fisheries Ordinance developed in Hong Kong in the near future, which was created to restrict and monitor fishing methods in Hong Kong waters (Living Seas Hong Kong, 2010, *Marine Species Protection*). Specifically, this ordinance bans the use of improper fishing techniques such as using explosives, toxic materials, or electrical equipment. However, the ordinance does not protect endangered species from being captured by other methods not mentioned above. Recently, the chief executive of the Hong Kong Special Administrative Region, Donald Tsang, announced plans to address the problems associated with trawling in his 2010-2011 policy

address (Living Seas Hong Kong, 2010). Trawling occurs when fishing boats drag a net through the water to catch fish. Mr. Tsang states “to protect our precious marine resources and ecology, we will implement a basket of management measures such as banning trawling in Hong Kong waters through legislation in order to restore our seabed and marine resources as early as possible” (*Banning Trawling*).

2.5.4 Stakeholders that Currently Market Sustainable Seafood

The seafood sustainability problem has gained an increasing amount of attention across the globe. Restaurants and other stakeholders have begun to take notice and create more sustainable seafood menus. One of the first restaurants to do this in the Hong Kong region is called the Bostonian, an American based company at the Langham Hotel (*Sustainable Dining in Hong Kong*, 2010). It has expanded its sustainable seafood selections and has drawn attention from conservation organizations for offering a completely sustainable seafood menu.

Dot Cod Seafood Restaurant and Oyster Bar is another restaurant in Hong Kong that has made huge strides towards providing only sustainable seafood (WWF-Hong Kong, 2010, *Green Seafood*). The main goal of the restaurant is to provide seafood based off of the seafood guide that WWF developed. Hence, they include only “recommended” seafood species from the Seafood Guide in its menus and do not offer any seafood dishes in the “avoid” category. Dot Cod hopes that by taking the initiative to provide green seafood choices, other companies will soon follow its lead. Colin Gouldsbury, the Executive Chef at Dot Cod, believes that if a substantial number of people begin to see that green seafood can be just as delicious and fulfilling as unsustainable seafood, they will begin to order more of the sustainable seafood choices.

In agreement with the Dot Cod Restaurant, Swire Properties Limited has also stopped serving seafood items in the “avoid” category of WWF’s Seafood Guide (WWF-Hong Kong, 2010, *Green Seafood*). Their main focus has been to stop serving these seafood items at company outings and banquets. Corporations such as Swire Properties Limited must be targeted just as much as restaurants, because they will often serve seafood at their banquets that is considered a delicacy. Frequently these banquets serve mostly unsustainable seafood. Swire Properties Limited, in support of WWF, has also started formulating internal policies to make its staff more aware of environmental issues that revolve around marine resources. With help from its staff, they hope to serve as a catalyst for sustainable seafood recognition and rely on convincing other corporations that marine conservation issues must be addressed in the immediate future.

One of the most crucial seafood purchasing decisions that stakeholders make is the amount of shark seafood that they provide to their customers. As previously mentioned, WWF-Hong Kong (2010) has instituted an “Alternative Shark-Free Menu” that it hopes restaurants and catering companies will consider when deciding on their seafood choices. Many corporations have already begun taking notice and have adopted the Shark-Free Menu into their seafood selection (*Companies Say No*). Thus far, over 75 corporations in the Hong Kong region have pledged to the WWF that they will no longer serve shark-fin soup at company outings, banquets, or other such events. Furthermore, 19 catering companies have confirmed to the WWF that they will now offer the Alternative Shark-Free Menu. These lists of corporations and catering companies can be found in appendices E and F, respectively.

2.6 Summary

Fish and seafood have been a large part of Chinese culture and tradition for thousands of years. Hong Kong’s increasing demand for seafood has endangered many types of fish species

and caused many fishermen to rely on fishing practices that damage the environment. Thus, most seafood products sold in Hong Kong, as well as China, are considered unsustainable. Many organizations and movements are promoting sustainable fish and seafood products to help conserve the marine and aquatic ecosystems through educational and informative programs. A number of studies have examined consumers' awareness of sustainable fish products; however, few have analyzed major seafood businesses, specifically restaurants and hotels. It is important to understand their role in the seafood market and the motives that influence the fish and seafood products they sell. If retailers can become advocates for sustainable seafood, then perhaps their customers will be able to follow their footsteps. Businesses' decision to switch to more eco-friendly menus can be a substantial step towards making the Hong Kong seafood market sustainable.

Chapter 3: Methodology

The goal of this project is to assess the feasibility of major hotels and restaurants in Hong Kong to increase the percentage of sustainable seafood they offer their customers. To achieve this, the project team will identify the factors that influence such businesses' purchasing decisions. This will provide an understanding of what conservation organizations need to do to convince restaurant and hotel managers to add sustainable seafood to their menus. When we identify these businesses' purchasing decisions, it will be important for us to analyze the circumstances that motivated these companies to begin serving more sustainable seafood. Their reasons will allow us to identify factors that can contribute to a successful or unsuccessful transition to a more sustainable seafood menu. Furthermore, it is important to evaluate employees' knowledge of sustainable seafood, as inadequate education could make the transition to using sustainable seafood nearly impossible. The WWF-Hong Kong will use this research information to develop educational tools that will increase these businesses' awareness of their seafood choices' environmental consequences.

3.1 Identify Factors that Influence Purchasing Decisions

In order to accurately identify influencing factors on major hotels' and restaurants' selections of seafood products, this study will administer both interviews and surveys with these businesses' representatives, preferably stock managers or business owners. The interview's open-ended questions allow the respondents to freely and comprehensively express their opinions. We will analyze these interviews to find trends in purchasing decisions that will lead to conclusions and recommendations. The survey will also provide additional quantifiable data that reveal these businesses' concerns of providing a more sustainable menu. This investigation will

use these results to support our recommendations regarding possible ways to assist hotels and restaurants in Hong Kong in making a positive transition to sustainable seafood products.

3.1.1 Interviews with Hotel and Restaurant Managers

This research plan includes interviewing general managers or stock employees of seafood businesses, who are directly involved with the purchasing decisions of their fish and seafood within their respective businesses. Our WWF liaison, Dr. Allen To, has provided us a list of 136 hotels and 540 restaurants as well as a potential target list of 29 businesses in Hong Kong that are possible candidates to interview. The team will organize two lists of priority businesses based on location, customer traffic, and amount of fish and seafood sold. This will include a prioritized list of Chinese restaurants, along with a list of prioritized hotels. Looking just at the prioritized lists, 25 hotels and 25 restaurants will randomly be selected to interview. By devoting a majority of our time to conducting our interviews, the team hopes to complete our data collection by February 11th. If certain seafood businesses decline an interview, another hotel or restaurant will be randomly selected from the appropriate list until our quota is met. We have designed this strategy so that the sample is still random, but only includes prioritized restaurants that have been identified because of their likeliness to include seafood as a major menu item. The prioritized list of hotels focuses on ones that offer banquets, and are therefore most likely to serve seafood. Meanwhile, Chinese restaurants that serve seafood are included in the list of restaurants. The list also puts more emphasis on the restaurants that have a larger capacity.

The team first needs to contact the businesses by phone and ask if the manager or a seafood stock employee is willing to be interviewed by our team. After explaining our project and goals, it is important to introduce ourselves under Worcester Polytechnic Institute's name; connecting ourselves with WWF-Hong Kong may introduce some biases, and WPI will represent

a neutral institution. We must assure the participants' anonymity and their right to skip questions or withdraw from the interview. The interviewee will select the date and time of the interview and the project team will always try to meet the requests of the interviewee for their convenience.

Interviews will occur at the place of business, and our team will try to schedule them according to their location. With only about five weeks from the time of our arrival to collect interview data, only two team members will be used for businesses that have only one interviewee. This will allow for more interviews to take place over our limited time in Hong Kong. It is also important that we try to cluster interviews by their location to facilitate conducting multiple interviews in one general area on any given day. Our team will determine the proposed date of the interview ahead of time and will allow the interviewee to select the time that is most convenient for him or her. It is assumed that most interviewees would want the interview conducted during quiet hours; therefore there will be limited time frames in which interviews can be conducted. Appendices G and H sort the list of potential hotels and restaurants, into groups according to their location.

Our interview protocol contains a list of prioritized questions that includes a small assessment regarding the interviewees' awareness of sustainable seafood issues, and aims towards identifying factors that influence their choices of seafood products (refer to Appendix I). Additionally, we will recognize ways in which conservation organizations could help businesses incorporate more sustainable seafood options into their menus. Some of the questions asked depend on the type of business being interviewed (e.g., hotels or restaurants) and the length of time that the interviewee will be available to answer questions.

The interview will mainly consist of open-ended questions. This investigation will employ the content analysis method to generate quantitative results from the interview answers in order to determine:

1. Primary factors that seafood businesses are concerned with when selecting a seafood supplier.
2. Percentage of seafood businesses that consider environmental effects and sustainability when selecting seafood.
3. Strategies that conservation organizations can employ to assist businesses in transitioning to more sustainable seafood menus.
4. Predictions of consumer reaction to a higher priced, more sustainable menu.
5. Predictions regarding the impacts on business revenue caused by the alterations in the seafood menu.
6. Obstacles that interviewees anticipate will occur when implementing additional sustainable seafood options.

In order to organize the responses into clear results, we will find common opinions among the seafood businesses. We will also provide comparisons between the responses of hotels versus those of restaurants in our analyses. This will allow us to analyze whether business type influences their willingness and ability to choose more sustainable fish products.

An alternative interview protocol (see Appendix J) will be used for seafood businesses that have already taken initiatives in providing sustainable seafood and fish products. Many of the interview questions will ascertain the businesses' reasons for choosing sustainable alternatives and their transition process. Questions from the previous interview protocol

regarding purchasing decisions and sustainable seafood knowledge will also be included. With the interviewees' responses we will try to quantify the results to reveal the following:

- 1) Purchasing methods that are used to acquire their sustainable seafood supply.
- 2) Factors that influence their seafood purchasing decisions.
- 3) Impacts on their business (e.g. customer support and revenue) after switching to more sustainable seafood choices.
- 4) Education level of their staff concerning sustainable seafood.
- 5) Reasons or motivations for switching to sustainable seafood alternatives

Results from these interviews will be important in identifying how sustainable seafood menus have been able to benefit or harm businesses. If we can show that businesses can still thrive while serving sustainable seafood, then conservation organizations can stress these benefits as motivation to prospective restaurants and hotels. Additionally, these results will depict the variations in the factors that influence a business' purchasing decisions.

3.1.2 Survey of Hotel and Restaurant Managers

We will conduct a survey with managers or seafood stock employees of hotels and restaurants to capture a greater number of responses from people in the seafood market. In order to achieve a 95% confidence level we will need to survey 240 hotels and restaurants. Rather than sampling, our team will distribute the survey questionnaire to all the restaurants and hotels on the WWF-provided list. This list is already a sample of the seafood business population, so it is sufficient to target all of them in order to reach our high quota. Since we want to receive a high rate of response from the hotels and restaurants, we will administer the survey questionnaire by personally delivering it to the business' location. We will schedule the deliveries of the questionnaire with our interviews, so that two members of our team can survey numerous

restaurants and hotels while the other two members conduct the interview. The businesses will be grouped by location to efficiently utilize time. Before conducting the actual survey, we will compose a draft questionnaire and pre-test it with individuals who work in the WWF-Hong Kong office to ensure that our survey does not contain any biased or unclear questions. The survey is written in English and Cantonese (refer to Appendix H).

The survey questionnaire consists of multiple choice and scaled questions. Through this survey, we hope to gain further insight on the concerns that restaurant and hotel businesses have when deciding whether or not to incorporate a sustainable seafood menu. The project team will attempt to correlate the survey results with the findings from interviews. Since the questionnaires are far more structured, it will be much easier to organize and analyze the large amount of data collected.

3.2 Assess the knowledge of stakeholders regarding sustainable seafood

Knowing how much seafood businesses understand about sustainability, our team will be able to see how large an issue sustainable seafood is among hotels and restaurants and whether providing a more sustainable menu will be feasible or not. Without a knowledgebase of seafood sustainability, it will be nearly impossible to expect businesses to transition easily to providing more sustainable products. The survey and interviews that are used for this portion of the research are the same ones described in section 3.1. The questions that relate to knowledge of the seafood businesses are discussed here.

3.2.1 Survey and Interviews with Hotel and Restaurant Managers

The survey and interviews include questions that evaluate the hotel and restaurant managers' knowledge of sustainable seafood. The interview will contain a question that will ask the interviewee to state what they believe "sustainable" is. Using their responses, we will use

content analysis to show the percentages of interviewees who were able to provide a concrete definition similar to ours on section 2.3, and secondly to show the variation in their interpretations about sustainability. For example, if a large percentage of hotel and restaurant managers are not able to provide something similar to our definition, then this may be considered one of the main factors for why they do not purchase sustainable seafood.

The survey contains similar questions as the interview protocols regarding sustainability. There are three questions that directly relate to sustainable seafood information. Using the results from these three questions we will analyze the responses and present information regarding the following:

- 1) Percentage of respondents who were able to identify unsustainable fish species.
- 2) Percentage of respondents who know the general conditions that make seafood sustainable.
- 3) Amount of general knowledge each respondent has about sustainable seafood (1-5 scale, in their own opinion).

The answers provided by the respondents will show where there are gaps or misunderstandings. The statistics can provide conservation organizations with insight on where they should focus their attention in developing education programs.

3.3 Research Limitations

In the process of conducting this research, our team anticipates obstacles in the information gathering process. These constraints are inevitable, but by anticipating them, we can set our expectations accordingly.

The first constraint is the length of the investigation in Hong Kong. Dr. To's list of 676 hotels and restaurants are all within our sampling frame, for both interviews and the survey. We have attempted to set a reasonable quota, but with our limited amount of time, it may be difficult to achieve. As a result, we will prioritize the list based on restaurant size, location, and type to gather the information that will be most relevant to our research.

Another constraint that may be present in our research is the amount of information the seafood businesses will provide. Dr. To explained that many Chinese restaurants are family-owned and are only concerned with their company's financial success. If they have no interest in sustainable seafood options, then they may not be willing to give us an interview or fill out our questionnaire. If an interview does occur, then their responses regarding sustainability may be limited because they may not want to reveal information that relates to their financial success, such as their seafood purchases. It can be difficult to draw conclusions about locally owned Chinese restaurants if we cannot obtain sufficient data. In contrast, hotels in Hong Kong are often more international and may be more willing to answer questions regarding sustainable seafood. Therefore, our team anticipates less trouble with collecting adequate useful data from hotels.

Lastly, our team believes there may be constraints due to the language barrier. Some Chinese restaurant owners may only speak Cantonese, which may prevent interviewing them given only one fluent Cantonese speaker on the project team. Dr. To has also recognized this possible restraint and has taken steps to try to find additional Cantonese-speaking students from Hong Kong University to help conduct some of the interviews.

Summary

Utilizing the methods proposed in this chapter, this project will analyze and identify the factors that influence seafood businesses when they make their fish and seafood product selections. Additionally, the IQP team will assess the knowledge of the hotel and restaurant managers in regards to sustainable seafood. The results will provide evidence as to whether or not it is feasible for businesses to provide a larger percentage of sustainable seafood to their customers. We expect to make recommendations to WWF-Hong Kong for future campaigns to educate and influence seafood businesses about sustainable fish and seafood and the necessity of preserving our marine and aquatic resources.

References

- Agriculture, Fisheries and Conservation Department. (2010). *Members' Information, Permit and License*. Retrieved November 7, 2010, from Hong Kong Chamber of Seafood Merchants Limited: http://www.seafood.org.hk/memberhome_e.htm
- Bigdeli, S. (2007, November 15). *WTO provisions and implications for energy subsidies*. University of Bern: NCCR Trade Regulation. Retrieved on November 20, 2010, from <http://www.unep.ch/etb/events/EnergySubsidiesPresentations1516Nov07/Presentation%20Sadeq%20Bigdeli.pdf>
- Blankenship, K. (1998, October). Signs of 'growth overfishing' seen in Bay's crab population. *Chesapeake Bay Journal*, 8(7). Retrieved November 20, 2010, from <http://www.bayjournal.com/article.cfm?article=1710>
- Blue Ocean Institute. (2010). *Green Chefs*. Retrieved November 25, 2010, from <http://www.blueocean.org/home>
- Bon Appetit Management Company. (2007). *Seafood*. Retrieved November 17, 2010, from <http://www.circleofresponsibility.com/page/14/seafood.htm>
- Boulanger, K., DeMott, R., Nikitas, D., & Patchel, B. (2008). *The Market Viability of Eco-Fish in Hong Kong*. Unpublished IQP report. Worcester: WPI.
- Buck, E. (2010, July 2). *Seafood marketing: Combating Fraud and Deception*. Washington D.C: Congressional Research Service.
- Burns, E., Dahlmann, J., Dickson, J. & Zeb, J. (2009, February 20). *WWF Hong Kong: Seafood Supply*. Unpublished IQP report. Worcester: WPI.
- Center for Food Safety-Hong Kong. (2010). *Import Control/Export Certification*. Retrieved December 3, 2010, from http://www.cfs.gov.hk/english/import/import_icfsg_10.html
- Chan, M. C. (2009). *2009 Hong Kong Seafood Export Guide*. Portland, ME: Maine International Trade Center.
- Chan, P. S. (1999a). Marketing Aspects of the Live Seafood Trade in Hong Kong and the People's Republic of China. *Marketing and Shipping Live Aquatic Products: Proceedings of the Second International Conference and Exhibition* (pp. 193-199). Seattle: University of Alaska Sea Grant College Program.
- Chan, P. S. (1999b). Wholesale and Retail Marketing Aspects of the Hong Kong Live Seafood Business. *Marketing and Shipping Live Aquatic Products: Proceedings of the Second International Conference and Exhibition* (pp. 201-205). Seattle: University of Alaska Sea Grant College Program.
- Chan, T. T. (2005). *Study on the Current Status and Potential Sustainable Development of the Aquaculture Industry in Hong Kong*. Hong Kong: Civic Exchange.
- Clarke, S. (2004). Understanding pressures on fishery resources through trade statistics: a pilot study of four products in the Chinese dried seafood market. *Fish and Fisheries*, 5, 53-74.

- Conservation Alliance for Seafood Solutions. (2010). *Who we are*. Retrieved November 25, 2010, from <http://www.solutionsforseafood.org/who-we-are>
- CustomInsight. (2010). *Survey Random Sample Calculator*. Retrieved November 27, 2010, from Talent Management Solutions: <http://www.custominsight.com/articles/random-sample-calculator.asp>
- Einhorn, B. (2010, October 21). *From China, the Future of Fish*. Retrieved November 5, 2010, from Bloomberg Businessweek: http://www.businessweek.com/magazine/content/10_44/b4201088229228.htm
- Fish Marketing Organization-Hong Kong. (2006). *Fish Marketing Organization Introduction*. Retrieved November 10, 2010, from FMO: http://www.fmo.org.hk/index/lang_en/page_fmo-fishlaw/
- Fisheries Research and Development Corporation. (2004). *What's so healthy about seafood booklet*. Retrieved November 20, 2010, from FRDC: http://www.frdc.com.au/_webapp_315883/whats_so_healthy_about_seafood_booklet
- FishWise. (2010). *Profit responsibility*. Retrieved November 26, 2010, from http://www.fishwise.org/our-services-landing/our-services#Seafood_Retailers
- Food and Agriculture Organization of the United Nations. (2010). *Fisheries and Agriculture Statistics*. Retrieved November 4, 2010, from Fisheries and Aquaculture Department: <http://www.fao.org/fishery/en>
- Gascoigne, B. (2001). *History of Marco Polo*. Retrieved November 28, 2010, from HistoryWorld: <http://www.historyworld.net/wrldhis/PlainTextHistories.asp?historyid=ac96>
- Giuliani, G., De Bono, A., Kluser, S., & Peduzzi, P. (2004, August). *Overfishing, a major threat to the global marine ecology* (UNEP/DEWA/GRID-Europe Report, 7E29170). Geneva: United Nations Environment Programme/DEWA/GRID-Europe. Retrieved November 20, 2010, from http://www.grid.unep.ch/product/publication/download/ew_overfishing.en.pdf
- Grafton, R. Q., Arnason, R., Bjorndal, T., Campbell, D., Campbell, H. F., Clark, C. W., et al. (2006). Incentive-based approaches to sustainable fisheries. *Canadian Journal of Fisheries and Aquatic Sciences*, 63 (3), 699-711.
- Greenpeace. (2005, October). *A Recipe for Disaster: Supermarkets' Insatiable Appetite for Seafood*. London: Greenpeace.
- Guard, M., & Masaiganah, M. (1997). Dynamite Fishing in Southern Tanzania, Geographical Variation, Intensity of Use and Possible Solutions. *Marine Pollution Bulletin*, 34(10): 758-762.
- Hall, M., Alverson, D., & Metzals, K. (2000). By-Catch: Problems and Solutions. *Marine Pollution Bulletin*, 41(1-6): 204-219.
- Halweil, B. (2006). *Catch of the Day: Choosing Seafood for Healthier Oceans*. Washington D.C.: The Worldwatch Institute.
- Halweil, B. (2008). *Farming Fish for the Future*. Washington D.C.: The Worldwatch Institute.
- Halweil, B., & Nierenberg, D. (2008). Meat and Seafood: The Global Diet's Most Costly Ingredients. In The Worldwatch Institute, *2008 State of the World: Innovations for a Sustainable Economy* (pp. 61-74). New York: W.W. Norton & Company.

- Hofford, A. (2010, June 5). 'Man & Shark' [Video file]. Retrieved November 20, 2010, from <http://www.youtube.com/watch?v=Wa5MMWWKu6s>
- Hong Kong Census and Statistics Department. (2010, September 7). *Statistics on vessels, port cargo and containers for the second quarter of 2010*. Retrieved November 28, 2010, from Press Releases on Statistics: http://www.censtatd.gov.hk/press_release/press_releases_on_statistics/index.jsp?sID=2602&sUBID=16699&subjectID=&charsetID=&displayMode=D
- Hong Kong Tourism Board. (2010, July 28). *Seafood*. Retrieved November 28, 2010, from <http://www.discoverhongkong.com/eng/dining/seafood.html>
- Jacquet, J. L., & Pauly, D. (2006). The rise of seafood awareness campaigns in an era of collapsing fisheries. *Marine Policy*, 31, 308-313.
- Jacquet, J. L., & Pauly, D. (2007). Trade secrets: Renaming and mislabeling of seafood. *Marine Policy: The International Journal of Ocean Affairs*, 32 (3), 309-318.
- Koldewey, H. J., Atkinson, J., & Debney, A. (2009). Threatened species on the menu? Towards sustainable seafood use in zoos and aquariums. *International Zoo Yearbook*, 43, 71-81.
- Komodo National Park. (2007, April 9). *Threats to Biodiversity*. Retrieved November 20, 2010 from http://www.komodonationalpark.org/threats_to_biodiversity.htm
- Lai, L. W., & Yu, B. T. (1995). The 'Hong Kong' solution to the overfishing problem: A study of the cultured fish industry in Hong Kong. *Managerial and Decision Economics*, 16 (5), 525-535.
- Leadbitter, D., Gomez, G., & McGilvray, F. (2009). Sustainable fisheries and the East Asian Sea: Can the private sector play a role? *Ocean and Coastal Management*, 49, 662-675.
- Lee, C., & Sadovy, Y. (1998). A Taste for Live Fish: Hong Kong's Live Reef Fish Marke. *Naga, The ICLARM Quarterly*, 21, 38-42.
- Lindkvist, K. B., Trondsen, T., & Xie, J. (2008). Restructuring the Chinese seafood industry, global challenges and policy implications. *Marine Policy*, 32 (3), 432-442.
- Living Seas Hong Kong. (2010). *About Us*. Retrieved November 7, 2010, from Living Seas Hong Kong: http://www.livingseas.hk/index.php?option=com_content&view=section&id=5&Itemid=67
- Marine Stewardship Council. (2010). *Find a Supplier, Where to Buy*. Retrieved on December 1, 2010 from <http://www.msc.org/>
- Monterey Bay Aquarium. (2010). *Restaurant program*. Retrieved November 26, 2010, from Seafood Watch: http://www.montereybayaquarium.org/cr/seafoodwatch/web/sfw_restaurant_program.aspx
- Murawski, S. (2000) Definitions of overfishing from an ecosystem perspective. *ICES Journal of Marine Science*, 57: 649-658.
- National Marine Fisheries Services. (2010). *Marketing and Trade*. Retrieved November 28, 2010, from NOAA Central Library: <http://www.lib.noaa.gov/retiredsites/china/marketing.htm>
- New England Aquarium. (2010). *Sustainable seafood advisory services*. Retrieved November 26, 2010, from

- http://www.neaq.org/conservation_and_research/projects/fisheries_bycatch_aquaculture/sustainable_fisheries/corporate_partners/index.php
- New Zealand Trade & Enterprise. (2010). *The China Seafood Market Overview*. Shanghai, China: RedFurn Associates.
- Ng, A. M. (2009). *Shark fisheries management and the sustainable seafood movement: A possibility for sustainable shark-fin soup?* Nicholas School of the Environment. Durham: Duke University.
- Openrice Group Inc. (2010). *Seafood – Hong Kong Restaurants Guide*. Retrieved on November 26, 2010 from http://www.openrice.com/english/restaurant/sr1.htm?dishes_id=1009
- Pauly, D. (1988). Some definitions of Overfishing Relevant to Coastal Zone Management in Southeast Asia. *Tropical Coastal Area Management*, 3(1): 14-15.
- Redfern Associates. (2010). *The China Seafood Market Sector Overview 2010*. Shanghai: New Zealand Trade & Enterprise.
- Traveling Greener. (2010, March 9). Sustainable Dining in Hong Kong [Web log comment]. Retrieved November 20, 2010 from <http://www.travelinggreener.com/restaurants/sustainable-dining-hong-kong/>.
- Sadovy, Y., Donaldson, T., Graham, T., McGilvray, F., Muldoon, G., Phillips, M., et al. (2003). *While Stocks Last: The Live Reef Food Fish Trade*. Manila, Philippines: Asian Development Bank.
- Seafood Choices Alliance. (2007). Seafood Professionals Attitudes on Sustainability. *The UK Marketplace for Sustainable Seafood*, 30-34.
- Simon, S. (2008, July 14). *What is a convenience sample?* Retrieved November 26, 2010, from Research Designs: <http://www.childrens-mercy.org/stats/definitions/convenience.htm>
- Stickney, R. R., & McVey, J. P. (2002). *Responsible Marine Aquaculture*. New York: Cabi Publishing.
- Trenor, C. (2010). *Carting away the oceans*. Washinton, DC: GreenPeace USA.
- United Nations. (1987, December 11). *Report of the World Commission on Environment and Development*. New York: United Nations, General Assembly. Retrieved November 20, 2010, from <http://www.un.org/documents/ga/res/42/ares42-187.htm>
- Vannuccini, S. (1999). *Shark utilization, marketing and trade* (Vol. 8). Rome: Food and Agriculture Organization of the United Nations.
- Volpe, J., Beck, M., Ethler, V., Gee, J., & Wilson, A. (2010). *Executive Summary: 2010 Global Aquatic Performance Index*. Retrieved November 4, 2010, from The Pew Charitable Trusts: http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/GAPI%20Executive%20Summary.pdf?n=299
- Wilson, K. D. (2002). Restoration of Hong Kong fisheries through deployment of artificial reefs in marine protected areas. *ICES Journal of Marine Science*, 157-163.
- World Resources Institute. (2010). *Cyanide Fishing: A Poison Tide on the Reef*. Retrieved November 20, 2010, from <http://www.wri.org/publication/reefs-at-risk/cyanide-fishing>

Worcester Polytechnic Institute. (2010). *The Interactive Qualifying Project, IQP Learning Outcomes*. Retrieved on December 4, 2010 from <http://www.wpi.edu>

WWF. (2010). *Home, Annual Review 2008*. Retrieved November 5, 2010, from <http://www.wwf.org/>

WWF-Hong Kong. (2010). *Seafood Choice Initiative, Support WWF*. Retrieved November 6, 2010 from <http://www.wwf.org.hk/en/>

Zhang, X. (2010, November 4). *Seafood sector rides on growing Chinese market*. Retrieved November 4, 2010, from China Daily: http://www.chinadaily.com.cn/usa/epaper/2010-11/04/content_11502625.htm

Appendix A: World Wide Fund for Nature

The World Wide Fund for Nature (WWF) (2010), also known as the World Wildlife Fund in the United States, is an independent, non-profit organization dedicated to the protection and conservation of the natural environment. With over one thousand projects in their name, spanning from whale shark research in the Philippines to forest restoration in the Southern Caucasus, WWF has made it their goal to “build a future where people live in harmony with nature” (*Home Page*). The WWF-Hong Kong (2010) office was established in 1981 and has focused mainly on improving and developing Hong Kong’s sustainable biodiversity, especially its marine life, and on reducing air pollution. WWF-Hong Kong “delivers solutions for a living planet through conservation, footprint, and education programs” (*Support WWF*) by collaborating with other organizations and businesses.

WWF-Hong Kong (2010) receives a great amount of support from individuals and business partners to pursue its conservation initiatives. Including corporate and personal donations, along with proceeds from fundraising events, the annual income of WWF- Hong Kong (2009, *Financials*) is approximately HK\$50.5 million. In 2009, they reported having over 80 corporate members and more than 33,000 individual financial supporters, along with 90 full-time staff members in the five WWF offices that are located within Hong Kong (see Fig. 1). These offices, situated in Wan Chai, Central, Tai Po, Mai Po, and Hoi Ha Wan, provide WWF-Hong Kong with administrative and educational facilities for members, students, and staff. Over the five offices, there is a voluntary committee that consists of over fifty individuals who have expertise in numerous fields. These individuals provide professional advice on the strategies and programs that can be implemented in WWF-Hong Kong’s quest for conservation.

Our project group will be working closely with the Marine team of the WWF-Hong Kong Conservation Department in Central, Hong Kong under the guidance of officer Dr. Allen To.

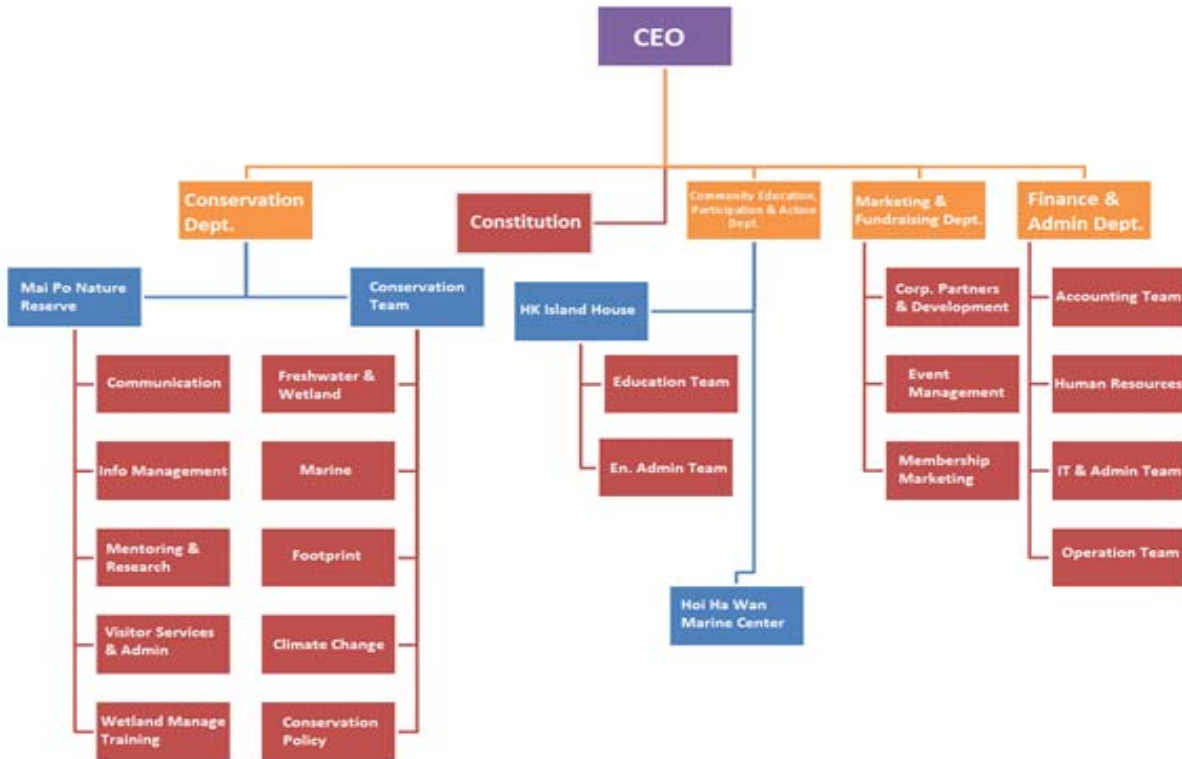


Fig. 1 Current Structure of WWF-Hong Kong (Boulanger, DeMott, Nikitas, & Patchel, 2008, p. 54)

In the last few years, WWF-Hong Kong (2010) has initiated many programs to help address the seafood sustainability problem that Hong Kong faces. In 2007, WWF-Hong Kong partnered with the Marine Stewardship Council (MSC) and MF Jebsen International Ltd. to promote their Seafood Choice Initiative. These sponsorships have allowed WWF-Hong Kong to continue its sustainable seafood program for ten years.

In addition to WWF-Hong Kong, other local organizations work towards the same goal, including Civic Exchange and Living Seas Hong Kong. The former organization, Civic Exchange, recently conducted research on Hong Kong’s mariculture system and provided a

platform for the local policymakers to sustain marine life (Chan T. T.-c., 2005). The latter organization is a group of enthusiastic Hong Kong residents who work with seafood supply companies and legislative groups to develop programs and policies to protect Hong Kong's marine ecosystem (Living Seas Hong Kong, 2010).

Appendix B: What is an IQP?

The Interactive Qualifying Project (IQP) is an academic requirement of Worcester Polytechnic Institute (WPI) students that “challenges students to address a problem that lies at the intersection of science or technology with social issues and human needs” (Worcester Polytechnic Institute, 2010, The Interactive Qualifying Project). IQPs have multiple topic divisions which include, but are not limited to, energy and resources, technology and environment, and education in a technological society. WPI students work in teams, under the guidance of one or more faculty advisors, and have the opportunity to work either on-campus or off-campus at residential or abroad project centers. The IQP helps develop a student’s ability to “analyze and synthesize results from social, ethical, humanistic, and technical perspectives” (IQP Learning Outcomes).

Hong Kong is notable for providing the best and most expensive seafood dining throughout the world. With a large demand for seafood, most of the fish produced are harvested by unsustainable means or are considered a threatened species. Many organizations have developed programs to educate consumers about the sustainability of the seafood they regularly eat. The previous IQP reports sponsored by the WWF-Hong Kong involved surveying consumers and assessing their knowledge of sustainable seafood or utilization of resource guides like the Seafood Choice Initiative (Boulanger, DeMott, Nikitas, & Patchel, 2008; Burns, Dahlmann, Dickson, & Zeb, 2009). This year, the WWF-Hong Kong has proposed a similar study, but with businesses.

Our IQP, also sponsored by the WWF-Hong Kong, involves a research study of seafood retailers in Hong Kong, to understand their decisions regarding the fish products they are buying

and selling to consumers. The project falls under energy and resources as it focuses on resource conservation and the “economic and policy choices made or proposed to govern this industry” (WPI, 2010, The IQP). We will investigate previous policies and campaigns that have worked towards conserving fish resources and provide additional recommendations that WWF-Hong Kong could use in their quest for increasing the amount of sustainable seafood in related markets.

Appendix C: Glossary

Aquatic Ecosystem: an ecosystem in a body of water, includes freshwater and salt

By-catch: the fish or portions of a fish that are discarded after capture; can be a non-targeted species, damaged, have spoiled, or just cannot fit due to the lack of space in the boat's storage unit

Dynamite Fishing: use of explosives to stun fish for harvesting

Endangered: a species in danger of extinction

Fish: an aquatic animal; used in this report mainly as reference to freshwater fish; can broadly include sea-bound fish

Fishing with Poisons: use of poisons (e.g. cyanide) to harvest fish

Health Certificate: certificates issued by the Food and Environmental Hygiene Department in Hong Kong to foods containing ingredients from animal, poultry, or fish; includes description of a product (e.g. ingredients, weight, country of destination, country of origin of the ingredients in the product, names and addresses of the consignee and consignor, and name and address of the food establishment in Hong Kong) (Center for Food Safety-Hong Kong, 2010, *Import Control/Export Certification*)

Marine Ecosystem: refers to salt bodies of water in the world e.g. oceans, lagoons, salt marshes

Overfishing: fishing practice where fish are overexploited and are caught faster than they can reproduce

Processed aquatic products: aquatic foodstuff resulting from unprocessed products; these products may contain ingredients that are necessary for their manufacture or to give them specific characteristics. (Agriculture, Fisheries and Conservation Department , 2010, *Permit and License*)

Red-category species: refers to fish and other marine species that are “over-exploited, caught or farmed in an ecologically unfriendly way, or come from fisheries that are not well managed” (WWF, 2007, p.1)

Retailer: a merchant who sells goods directly to the consumer; in our report, this refers to the hotels, restaurants, and supermarkets that sell seafood

Seafood: any sea animal or plant that is consumed by humans; can broadly include freshwater fish, but mainly references species from the ocean

Sustainable: refers to “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (UN, 1987). In regards to fish and seafood, this includes proper fishing practices and harvesting methods that don’t compromise the natural marine ecosystem (*refer to “unsustainable”*)

Threatened: a species likely to be endangered in the near future

Unprocessed aquatic products: aquatic foodstuff that have not undergone any processing; includes products that have been divided, parted, severed, sliced, boned, minced, skinned, ground, cut, cleaned, trimmed, chilled, frozen, deep frozen or thawed (Agriculture, Fisheries and Conservation Department, 2010, *Permit and License*)

Unsustainable: in regards to fish and seafood, refers to fishing and harvesting practices that compromise the natural marine ecosystem e.g. overfishing, by-catch, dynamite fishing, fishing with poisons, and fishing for threatened or endangered species

Appendix D: Seafood Guide Species

(WWF-Hong Kong, 2010, *Seafood Species*)

Recommended		Think Twice		Avoid	
Pacific salmon	Alaska, US	<i>Atlantic salmon</i>	Norway	Bombay duck	S China Sea
Sardine	Portugal	Bigeye	S China Sea	Hairtail	S China Sea
Leopard coral trout	Australia	Silver pomfret	S China Sea	Flathead	S China Sea
Sea urchin	S China Sea	Rockfish	S China Sea	Unicorn leatherjacket	S China Sea
Scallop	China	<i>Star snapper</i>	Hong Kong	High-finned grouper	SE Asia
Scallop	Australia	<i>Turbot</i>	China	Squaretail coral trout	SE Asia
Chilean sea bass	UK	<i>Tiger grouper</i>	SE Asia	Camouflage grouper	SE Asia
Geoduck	N America	Sardine	Thailand	Leopard coral trout	SE Asia
Clam	China	Fan-bellied leatherjacket	S China Sea	Orange roughy	Global
Black Cod	N America	White spotted rabbitfish	S China Sea	<i>Hong Kong grouper</i>	China
Squid	Global	<i>Areolate grouper</i>	Hong Kong	Red crab	S China Sea
Abalone	Australia	<i>Duskytail grouper</i>	Hong Kong	<i>Shrimp</i>	S China Sea
Abalone	China	<i>Giant grouper</i>	Hong Kong	Horseshoe crab	S China Sea
Rock lobster	W Australia	<i>Three-banded sweetlip</i>	Hong Kong	Chilean sea bass	Global
Rock lobster	E Australia	<i>Orange-spotted grouper</i>	Thailand	Swordfish	Global
Oyster	China	<i>Mud crab</i>	China	Cuttlefish	S China Sea
		Golden threadfin bream	S China Sea	Abalone	S Africa
		<i>Mangrove snapper</i>	Hong Kong	King mackerel	S China Sea
		Ling	New Zealand	Bluefin Tuna	Global
		Horsehead	S China Sea	Mantis shrimp	S China Sea
		<i>Pompano</i>	Hong Kong	Humphead wrasse	SE Asia
		<i>Yellow croaker</i>	China	Caviar	Global
		<i>Yellowfin seabream</i>	Hong Kong		
		Yellowfin tuna	Global		
		Squid	S China Sea		
		Sole	New Zealand		

Appendix E: Organizations in Hong Kong That Have Said No To Shark-Fin Soup

(WWF-Hong Kong, 2010, *Shark Initiative*)

ADM Capital
ADM Capital Foundation
Allan International Holdings Ltd.
Allen & Overy LLP
Asiatic Marine Ltd
Atkins China Limited
B.P. (Building & Engineering) Co. Ltd.
BCI Asia Construction Information Ltd.
Bowen Capital Management
Branded Limited
Branscombe Marine Consultants Ltd.
BUDA E&C Limited
BUDA Pipe Rehabilitation & Engineering Company Limited
BUDA Surveying Limited
Canon Hongkong Co. Ltd
Citi Hong Kong
Collyer Logistics South China Ltd
Construction Professionals' Development Centre
Craft Projects International Co. Ltd
Diving Express Ltd
DTZ
Eight Custom Media Limited
Gide Loyrette Nouel
Hallmark Cards (HK) Limited
Hang Seng Bank Limited
Hong Kong and China Gas Company Limited
Hong Kong Cancer Fund
Hong Kong Institute of Utility Specialists
Hong Kong Utility Research Centre
HSBC
i.Dex Development Ltd
Internet Professional Association
Jenston Technology Corporation Ltd.
Jenston Works Co., Ltd.
Johnson Matthey Hong Kong Limited
Jones Lang LaSalle
Lloyd Northover
Magnum Offset Printing Co. Ltd
Mandarin Orange Clothing
Manulife (International) Limited
MF Jebsen International Ltd

Mitsubishi Electric Hong Kong Group Limited
Mitsubishi Elevator Hong Kong Company Limited
MSOI Limited
Nearly Friday Ltd
Ocean Park Hong Kong
Oceanway Corporation Limited
PPP Company Ltd
ProJOB21.com Ltd
Pure Fitness
Pure Yoga
Robot Design Ltd
Ronald Lu & Partners (Hong Kong) Ltd
SB Consulting
Shaw & Sons Limited
Simpson Marine Limited Hong Kong
Sovereign Trust (Hong Kong) Limited
Sterling Enterprises Ltd
Swire Beverages Limited
Swire Coca- Cola HK
Swire Properties Limited
Swiss Re
The Hong Kong Institute of Education
The Samaritans
The Society for the Prevention of Cruelty to Animals (Hong Kong)
The University of Hong Kong
ThreeSixty
United Services Recreation Club
Unleash Limited
US & Associates Consulting Co. Ltd.
UTI (International) Limited
Utility INFO (1Call) Limited
Utility INFO (HK) Limited
Utility INFO (Macau) Limited
Utility INFO Limited
Westminster Travel Limited
Wharf T&T Limited
Wind Prospect (HK) Ltd
Xi Yan

Appendix F: Shark-Free Catering Organizations

(WWF-Hong Kong, 2010, *Shark Initiative*)

City Garden Hotel, Hong Kong
Choi Fook Royal Banquet, 5 restaurants
Hong Kong Gold Coast Hotel
Island Pacific Hotel, Hong Kong
Jumbo Kingdom
JW Marriott Hotel, Hong Kong
King of the King Chinese Restaurant
King Palace Chinese Restaurant, 9 restaurants
Noah's Ark Resort
Royal Palace Chinese Restaurant, 6 restaurants
Royal Wedding, 2 restaurants
Super Star Seafood Restaurant, 14 restaurants
The Banqueting House, 2 restaurants
The Cityview
The China House, 2 restaurants
The Excelsior, Hong Kong
The Hong Kong Jockey Club
The Langham, Hong Kong
The Royal Pacific Hotel, Hong Kong

Appendix G: List of Hotels by Regions

Hong Kong Island

Name (Chi)	Name (Eng)		Western	Chinese
宏基國際賓館	Bishop Lei International House	HK	N	N
香港蝴蝶酒店	Butterfly On Morrison	HK	Y	Y
明愛張奧偉國際賓館	Caritas Oswald Cheung International House	HK	N	N
中環麗栢酒店	Central Park Hotel	HK	N	N
城市花園酒店	City Garden Hotel	HK	Y	Y
港麗酒店	Conrad Hong Kong	HK	Y	Y
香港麗悅酒店	Cosmo Hotel Hong Kong	HK	Y	Y
香港麗都酒店	Cosmopolitan Hotel Hong Kong	HK	Y	Y
香港萬怡酒店	Courtyard Hong Kong	HK	Y	N
銅鑼灣皇悅酒店	Empire Hotel Hong Kong · Causeway Bay	HK	Y	N
灣仔皇悅酒店	Empire Hotel Hong Kong · Wan Chai	HK	Y	Y
銅鑼灣快捷假日酒店	Express by Holiday Inn Causeway Bay Hotel	HK	Y	Y
香港君悅酒店 - 香港	Grand Hyatt Hong Kong	HK	Y	Y
粵海酒店	Guangdong Hotel Hong Kong	HK	Y	Y
港島海逸君綽酒店	Harbour Grand Hong Kong	HK	Y	Y
北角海逸酒店	Harbour Plaza North Point	HK	Y	Y
雅逸酒店	Hotel Bonaparte by Rhombus	HK	N	N
仁民飯店	Hotel Jen	HK	Y	N
宜必思世紀軒	Ibis North Point	HK	N	N
港島太平洋酒店	Island Pacific Hotel	HK	Y	Y
港島香格里拉大酒店	Island Shangri-La Hong Kong	HK	N	Y
N/A	JIA Boutique Hotel	HK	N	N
香港 JW 萬豪酒店	JW Marriott	HK	Y	Y
香港銅鑼灣海景酒店	L'hotel Causeway Bay Harbour View Hong Kong	HK	Y	N
南灣海景酒店	L'hotel Island South	HK	Y	N
蘭桂坊酒店	LanKwai Fong Hotel	HK	Y	N
香港逸蘭精品酒店	Lanson Place Hotel	HK	N	N
數碼港艾美酒店	Le Meridien Cyberport	HK	Y	Y
六國酒店	Luk Kwok Hotel	HK	Y	Y

香港文華東方酒店	Mandarin Oriental, Hong Kong	HK	Y	Y
香港銅鑼灣維景酒店	Metropark Hotel Causeway Bay Hong Kong	HK	Y	N
香港灣仔維景酒店	Metropark Hotel Wanchai Hong Kong	HK	Y	N
香港麗東酒店	Newton Hotel Hong Kong	HK	Y	N
世紀香港酒店	Novotel Century Hong Kong	HK	Y	Y
香港華美達酒店	Ramada Hong Kong Hotel	HK	Y	Y
富豪香港酒店	Regal Hongkong Hotel	HK	Y	Y
萬麗海景酒店	Renaissance Harbour View Hotel	HK	Y	Y
珀麗酒店	Rosedale on the Park	HK	Y	Y
尚豪酒店	Sohotel Hong Kong	HK	N	N
南洋酒店	South Pacific Hotel	HK	Y	Y
香港銅鑼灣利景酒店	The Charterhouse Causeway Bay Hotel	HK	Y	N
英皇駿景酒店	The Emperor (Happy Valley) Hotel	HK	Y	N
香港怡東酒店	The Excelsior, Hong Kong	HK	Y	Y
芬名酒店	The Fleming	HK	Y	N
女青園景軒酒店	The Garden View - YWCA	HK	N	N
灣景國際酒店	The Harbourview	HK	Y	N
置地文華東方酒店	The Landmark Mandarin Oriental, Hong Kong	HK	Y	N
柏寧酒店	The Park Lane Hong Kong	HK	Y	Y
香港華美粵海酒店	The WharneyGuang Dong Hotel Hong Kong	HK	N	N
麥當勞道貳號	Two Macdonnell Road	HK	N	N
香港四季酒店	Four Seasons Hotel Hong Kong	HK	Y	Y

Kowloon

Name (Chi)	Name (Eng)		Western	Chinese
港青酒店	YMCA of Hong Kong	Kln	Y	Y
龍堡國際	B P International	Kln	Y	Y
紅茶館酒店(大角咀晏架街)	Bridal Tea House Hotel (Anchor Street)	Kln	Y	N
紅茶館酒店(油麻地鴉打街)	Bridal Tea House Hotel (Arthur Street)	Kln	Y	N
紅茶館酒店(紅磡蕪湖街)	North Wing of Bridal Tea House Hotel (WuHu St)	Kln	Y	N
紅茶館酒店(差館里)	South Wing of Bridal Tea House Hotel (Station	Kln	Y	N

	Lane)			
紅茶館酒店(紅磡溫思勞街)	Bridal Tea House Hotel (Winslow Street)	KIn	Y	N
香港蝴蝶酒店	Butterfly On Prat	KIn	Y	N
明愛白英奇賓館	Caritas Bianchi Lodge	KIn	N	N
明愛賓館	Caritas Lodge (Boundary Street)	KIn	N	N
太極軒 279	CHI Residences 279	KIn	N	N
九龍麗悅酒店	Cosmo Kowloon Hotel	KIn	N	N
遠東帝豪酒店	Dorsett Far East Hotel	KIn	N	N
帝豪九龍酒店	Dorsett Kowloon Hotel	KIn	N	N
帝豪海景酒店	Dorsett Seaview Hotel	KIn	N	N
香港逸東酒店	Eaton Hotel Hong Kong	KIn	Y	Y
尖沙咀皇悅酒店	Empire Hotel Kowloon·TsimShaTSui	KIn	Y	N
港威酒店	Gateway Marco Polo	KIn	N	N
豪境酒店	Goodrich Hotel	KIn	N	N
九龍海逸君綽酒店	Harbour Grand Kowloon	KIn	Y	Y
8 度海逸酒店	Harbour Plaza 8 Degrees	KIn	Y	Y
都會海逸酒店	Harbour Plaza Metropolis	KIn	Y	Y
香港金域假日酒店	Holiday Inn Golden Mile Hong Kong	KIn	Y	Y
香港豪畔酒店	Harbour Hotel	KIn	N	N
華國酒店	Hotel Benito	KIn	2	N
香港日航酒店	Hotel Nikko Hongkong	KIn	Y	Y
麗景酒店	Hotel Panorama	KIn	Y	N
香港凱悅酒店 - 尖沙咀	Hyatt Regency Hong Kong, TsimShaTsui	KIn	Y	Y
帝國酒店	Imperial Hotel	KIn	N	N
海景嘉福酒店	InterContinental Grand Stanford Hong Kong	KIn	Y	Y
香港洲際酒店	InterContinental Hong Kong	KIn	Y	Y
九龍香格里拉大酒店	Kowloon Shangri-La	KIn	N	Y
如心海景酒店暨會議中心	L'hotel Nina et Convention Centre	KIn	Y	Y
香港旺角朗豪酒店	Langham Place Hotel, Mongkok, Hong Kong	KIn	Y	Y
朗逸酒店	Largos Hotel	KIn	Y	N
九龍維景酒店	Metropark Hotel Kowloon	KIn		Y

旺角維景酒店	Metropark Hotel Mongkok	Kln	Y	Y
彌敦酒店	Nathan Hotel	Kln	Y	Y
新高雅酒店	New Kings Hotel	Kln	N	N
新聖地牙哥酒店	New San Diego Hotel	Kln	N	N
九龍麗東酒店	Newton Hotel Kowloon	Kln	Y	N
香港九龍諾富特酒店	Novotel Nathan Road Kowloon Hong Kong	Kln	Y	N
東方泛達酒店	Oriental Lander Hotel	Kln	Y	N
百樂酒店	Park Hotel	Kln	N	N
太子酒店	Prince, Hong Kong	Kln	?	Y
馬可孛羅香港酒店	Marco Polo Hong Kong	Kln	Y	Y
恆豐酒店	Prudential Hotel	Kln	Y	N
九龍華美達酒店	Ramada Hotel Kowloon	Kln	Y	N
華逸酒店	Rambler Garden Hotel	Kln	N	N
青逸酒店	Rambler Oasis Hotel	Kln	N	N
富豪九龍酒店	Regal Kowloon Hotel	Kln	Y	Y
富豪東方酒店	Regal Oriental Hotel	Kln	Y	Y
帝京酒店	Royal Plaza Hotel	Kln	Y	Y
聖地牙哥酒店	San Diego Hotel	Kln	N	N
新樂酒店	Shamrock Hotel	Kln	N	Y
香港喜來登酒店	Sheraton Hong Kong Hotels & Tower	Kln	N	Y
仕德福山景酒店	Stanford Hillview Hotel	Kln	Y	N
仕德福酒店	Stanford Hotel	Kln	Y	N
柏顏露斯賓館	The Anne Black - YWCA	Kln	N	N
城景國際	The Cityview	Kln	Y	Y
港景滙	The HarbourView Place	Kln	N	N
君怡酒店	The Kimberley Hotel	Kln	N	Y
九龍酒店	The Kowloon Hotel	Kln	Y	Y
香港朗廷酒店	The Langham, Hong Kong	Kln	N	Y
帝樂文娜公館	The Luxe Manor	Kln	Y	N
棉登酒店	The Minden	Kln	N	N
美麗華酒店	The Mira Hong Kong	Kln	Y	Y
帝苑酒店	The Royal Garden	Kln	Y	Y
皇家太平洋酒店	The Royal Pacific Hotel & Towers	Kln	Y	Y

香港 W 酒店	W Hong Kong	Kln	Y	Y
香港半島酒店	The Peninsula Hong Kong	Kln	Y	Y

Lantau

Name (Chi)	Name (Eng)		Western	Chinese
迪士尼好萊塢酒店	Disney's Hollywood Hotel	Lantau	N	N
香港迪士尼樂園酒店	Hong Kong Disneyland Hotel	Lantau	Y	Y
香港天際萬豪酒店	Hong Kong SkyCity Marriott Hotel	Lantau	Y	Y
富豪機場酒店	Regal Airport Hotel	Lantau	Y	Y

New Territories

Name (Chi)	Name (Eng)		Western	Chinese
嘉湖海逸酒店	Harbour Plaza Resort City	NT	Y	Y
香港黃金海岸酒店	Hong Kong Gold Coast Hotel	NT	Y	Y
香港凱悅酒店 - 沙田	Hyatt Regency Hong Kong, Sha Tin	NT	Y	Y
挪亞度假酒店	Noah's Ark Resort	NT	Y	Y
諾富特東薈城酒店	Hotel Novotel Hong Kong Citygate	NT	Y	N
悅來酒店	Panda Hotel	NT	Y	Y
麗豪酒店	Regal Riverside Hotel	NT	Y	Y
帝都酒店	Royal Park Hotel	NT	Y	Y
帝景酒店	Royal View Hotel	NT	Y	N

Appendix H: List of Restaurants by Regions

Hong Kong Island

Group Name (CH) Group Name (EN) Regions Territories

稻香飲食集團	Tao Heung Holding Ltd	Causeway Bay	HK
稻香飲食集團	Tao Heung Holding Ltd	Island East	HK
稻香飲食集團	Tao Heung Holding Ltd	Wanchai	HK
稻香飲食集團	Tao Heung Holding Ltd	HengFaChuen	HK
稻香飲食集團	Tao Heung Holding Ltd	Aberdeen	HK
稻香飲食集團	Tao Heung Holding Ltd	auseway Bay	HK
稻香飲食集團	Tao Heung Holding Ltd	Causeway Bay	HK
稻香飲食集團	Tao Heung Holding Ltd	HengFaChuen	HK
稻香飲食集團	Tao Heung Holding Ltd	Causeway Bay	HK
稻香飲食集團	Tao Heung Holding Ltd	Causeway Bay	HK
稻香飲食集團	Tao Heung Holding Ltd	North Point	HK
鴻星海鮮酒家	Super Star Group	Central	HK
鴻星海鮮酒家	Super Star Group	Wanchai	HK
鴻星海鮮酒家	Super Star Group	Causeway Bay	HK
鴻星海鮮酒家	Super Star Group	Quarry Bay	HK
美心集團	Maxims Group	TaikooShing	HK
美心集團	Maxims Group	Causeway Bay	HK
美心集團	Maxims Group	SiuSai Wan	HK
美心集團	Maxims Group	Pokfulam	HK
美心集團	Maxims Group	Causeway Bay	HK
美心集團	Maxims Group	Central	HK
美心集團	Maxims Group	Central	HK
美心集團	Maxims Group	Wan Chai	HK
美心集團	Maxims Group	TaikooShing	HK
美心集團	Maxims Group	Chai Wan	HK
美心集團	Maxims Group	Central	HK
美心集團	Maxims Group	Central	HK
美心集團	Maxims Group	Central	HK

美心集團	Maxims Group	Central	HK
美心集團	Maxims Group	TaikooShing	HK
美心集團	Maxims Group	Admiralty	HK
美心集團	Maxims Group	Causeway Bay	HK
美心集團	Maxims Group	Central	HK
美心集團	Maxims Group	Central	HK
東海	East Ocean	Wanchai	HK
東海	East Ocean	Quarry Bay	HK
東海	East Ocean	Wanchai	HK
東海	East Ocean	Central	HK
德興	Tack Hsin	Wan Chai	HK

Kowloon Bay

Group Name (CH) Group Name (EN) Regions Territories

稻香飲食集團	Tao Heung Holding Ltd	Mongkok	Kln
稻香飲食集團	Tao Heung Holding Ltd	Kwun Tong	Kln
稻香飲食集團	Tao Heung Holding Ltd	Mongkok	Kln
稻香飲食集團	Tao Heung Holding Ltd	Kowloon Bay	Kln
稻香飲食集團	Tao Heung Holding Ltd	simShaTsui	Kln
稻香飲食集團	Tao Heung Holding Ltd	N/A	Kln
稻香飲食集團	Tao Heung Holding Ltd	Ngau Tau Kok	Kln
稻香飲食集團	Tao Heung Holding Ltd	TsimShaTsui	Kln
稻香飲食集團	Tao Heung Holding Ltd	Mongkok	Kln
稻香飲食集團	Tao Heung Holding Ltd	Kowloon Bay	Kln
稻香飲食集團	Tao Heung Holding Ltd	N/A	Kln
稻香飲食集團	Tao Heung Holding Ltd	Kwun Tong	Kln
稻香飲食集團	Tao Heung Holding Ltd	Hunghom	Kln
稻香飲食集團	Tao Heung Holding Ltd	Mongkok	Kln
稻香飲食集團	Tao Heung Holding Ltd	N/A	Kln
稻香飲食集團	Tao Heung Holding Ltd	Kwun Tong	Kln
稻香飲食集團	Tao Heung Holding Ltd	Wong Tai Sin	Kln
稻香飲食集團	Tao Heung Holding Ltd	TsimShaTsui	Kln
稻香飲食集團	Tao Heung Holding Ltd	Lai Chi Kok	Kln
鴻星海鮮酒家	Super Star Group	TsimShaTsui	Kln
鴻星海鮮酒家	Super Star Group	TsimShaTsui	Kln
鴻星海鮮酒家	Super Star Group	Lai Chi Kok	Kln
鴻星海鮮酒家	Super Star Group	Kowloon Bay	Kln
鴻星海鮮酒家	Super Star Group	Tseung Kwan O	Kln

鴻星海鮮酒家	Super Star Group	Hung Hom	KIn
鴻星海鮮酒家	Super Star Group	TsimShaTsui	KIn
美心集團	Maxims Group	Kowloon Bay	KIn
美心集團	Maxims Group	Hunghom	KIn
美心集團	Maxims Group	Lam Tin	KIn
美心集團	Maxims Group	MongKok	KIn
美心集團	Maxims Group	Tsimshatsu	KIn
美心集團	Maxims Group	Kowloon Bay	KIn
美心集團	Maxims Group	Tsimshatsui	KIn
美心集團	Maxims Group	Hunghom	KIn
美心集團	Maxims Group	MongKok	KIn
美心集團	Maxims Group	Kowloon Tong	KIn
美心集團	Maxims Group	TsimShaTsui	KIn
美心集團	Maxims Group	Wong Tai Sin	KIn
美心集團	Maxims Group	Lam Tin	KIn
美心集團	Maxims Group	Tsimshatsui	KIn
美心集團	Maxims Group	Kowloon Tong	KIn
美心集團	Maxims Group	Kolwoon Bay	KIn
東海	East Ocean	Tsimshatsui	KIn
東海	East Ocean	Tsimshatsui	KIn
東海	East Ocean	Tsimshatsui	KIn
德興	Tack Hsin	Tsimshatsui East	KIn
德興	Tack Hsin	MongKok	KIn
德興	Tack Hsin	Kowloon Bay	KIn
德興	Tack Hsin	Tsimshatsui East	KIn
囍慶集團	Happiness Group	Tokwawan	KIn
囍慶集團	Happiness Group	Lam Tin	KIn
囍慶集團	Happiness Group	Kwun Tong	KIn

Lantau

Group Name (CH) Group Name (EN) Regions Territories

稻香飲食集團	Tao Heung Holding Ltd	N/A	Lantau
稻香飲食集團	Tao Heung Holding Ltd	Tung Chung	Lantau

New Territories

Group Name (CH) Group Name (EN) Regions Territories

稻香飲食集團	Tao Heung Holding Ltd	Tsing Yi	NT
稻香飲食集團	Tao Heung Holding Ltd	Tseung Kwan	NT
稻香飲食集團	Tao Heung Holding Ltd	Yuen Long	NT
稻香飲食集團	Tao Heung Holding Ltd	TuenMun	NT
稻香飲食集團	Tao Heung Holding Ltd	Tsuen Wan	NT
稻香飲食集團	Tao Heung Holding Ltd	Tsing Yi	NT
稻香飲食集團	Tao Heung Holding Ltd	Tai Po	NT
稻香飲食集團	Tao Heung Holding Ltd	Tsuen Wan	NT
稻香飲食集團	Tao Heung Holding Ltd	Yuen Long	NT
稻香飲食集團	Tao Heung Holding Ltd	Tseung Kwan O	NT
稻香飲食集團	Tao Heung Holding Ltd	Fanling	NT
稻香飲食集團	Tao Heung Holding Ltd	Kwai Chung	NT
稻香飲食集團	Tao Heung Holding Ltd	Shatin	NT
稻香飲食集團	Tao Heung Holding Ltd	Tseung Kwan O	NT
稻香飲食集團	Tao Heung Holding Ltd	suen Wan	NT
稻香飲食集團	Tao Heung Holding Ltd	TuenMun	NT
稻香飲食集團	Tao Heung Holding Ltd	Shatin	NT
稻香飲食集團	Tao Heung Holding Ltd	Kwai Fong	NT
稻香飲食集團	Tao Heung Holding Ltd	Ma On Shan	NT
稻香飲食集團	Tao Heung Holding Ltd	Tai Po	NT
稻香飲食集團	Tao Heung Holding Ltd	suen Wan	NT
稻香飲食集團	Tao Heung Holding Ltd	Tseung Kwan O	NT
稻香飲食集團	Tao Heung Holding Ltd	TuenMun	NT
稻香飲食集團	Tao Heung Holding Ltd	Kwai Fong	NT
稻香飲食集團	Tao Heung Holding Ltd	Tseung Kwan O	NT
稻香飲食集團	Tao Heung Holding Ltd	Tsuen Wan	NT
鴻星海鮮酒家	Super Star Group	Tsuen Wan	NT
美心集團	Maxims Group	Kwai Chung	NT
美心集團	Maxims Group	Shatin	NT
美心集團	Maxims Group	Ma On Shan	NT
美心集團	Maxims Group	TuenMun	NT
美心集團	Maxims Group	Tsuen Wan	NT
美心集團	Maxims Group	Tai Po	NT
美心集團	Maxims Group	Tin ShuiWai	NT
美心集團	Maxims Group	Tseung Kwan O	NT
美心集團	Maxims Group	Tin ShuiWai	NT
美心集團	Maxims Group	Tsing Yi	NT

美心集團	Maxims Group	Tsuen Wan	NT
美心集團	Maxims Group	Tsuen Wan	NT
美心集團	Maxims Group	Tai Po	NT
美心集團	Maxims Group	Ma On Shan	NT
美心集團	Maxims Group	Tsuen Wan	NT
美心集團	Maxims Group	Tai Po	NT
囍慶集團	Happiness Group	Yuen Long	NT

Appendix I: Interview Protocol I

Interview Protocol:

面試協議

- Introduce Team Members; two members will be present
介紹兩名出席的團隊成員
- Introduce project objectives/goals and additional project details
介紹本項目的目的，目標和更多的細節
- Inform interviewee that they can remain anonymous and can refuse to answer any questions if they wish
告知受訪者從而讓他們知道，他們有權保持匿名或者拒絕回答任何問題
- Also ask if they are fine with us voice-recording the interview and publishing a transcript of it in our report
並且會詢問他們是否願意接受讓我們用錄音機記載訪問過程，並且發表一份談話報告
- One person will conduct interview while the other takes notes.
一個人將會發問，另外一個人將會做筆記。
- When the interview is over, have them look over the notes to ensure accuracy.
當採訪結束，讓他們過目，以確保準確性。

Questions:

問題

1. What is your position at your business and how long have you been working here?
您在此餐館/酒店工作有多久？您的職位是什麼？
2. Are you the decision maker of the seafood supplies in your business? Where do you order your seafood from and in what condition (live, frozen, etc.)?
您是否有參與選擇海鮮供應種類？您通常在哪裡購入海鮮以及購入海鮮的條件是什麼（鮮活、冷凍等）？
3. What factors are you most concerned with when selecting a seafood supplier?
在選擇海鮮供應商的過程中，哪些因素是您最關心的？
4. Do you know the definition of sustainable seafood? What is your definition of sustainable seafood?
您知道可持續海鮮的定義嗎？請說出您對可持續海鮮的理解。
5. Do you consider environmental effects and sustainability when selecting your seafood?
您在選擇海鮮時會考慮環境和可持續發展這些因素嗎？
6. Do you think environmental organizations such as WWF-HK has the most important role to change your seafood consumption behavior?
您認為環境保護組織，如香港世界自然基金會，對海鮮消費行為起到最大的作用嗎？
7. If yes, what roles should these organizations be more active in?
如果是，您認為這些組織應更積極扮演哪些角色？
8. Is your establishment promoting sustainable seafood to attract customers?
貴餐館/酒店曾否有納入可持續海鮮來吸引顧客？
9. If you had to raise the price of seafood items to serve more eco-friendly food, how do you think your customers would respond? How might you try to market sustainable seafood to your customers?
如果您必須提高可持續海鮮的價格來供應更多的環保食物，您認為您的客人將會如何回應？您曾否為您的客人推銷過可持續海鮮？
10. What is the biggest obstacle for you not to incorporate sustainable seafood in your menu?
如果要納入可持續海鮮到您的菜單上，什麼會是您最大的障礙？
11. Do you think the transform of your purchasing decisions on sustainable seafood will make any difference in your business revenue?
您認為購入可持續海鮮為重要菜單項目會對您業務收入有影響嗎？
12. Do you have any additional thoughts or comments that we did not already discuss?
您是否有其他我們沒有討論到的想法或者意見？

Appendix J: Interview Protocol II

Interview Protocol:

面試協議

- Introduce Team Members; two members will be present
介紹兩名出席的團隊成員
- Introduce project objectives/goals and additional project details
介紹本項目的目的，目標和更多的細節
- Inform interviewee that they can remain anonymous and can refuse to answer any questions if they wish to do so.
告知受訪者從而讓他們知道，他們有權保持匿名或者拒絕回答任何問題。
- Also ask if they are fine with us voice-recording the interview and publishing a transcript of it in our report.
並且會詢問他們是否願意接受讓我們用錄音機記載訪問過程，並且發表一份談話報告。
- One person will conduct interview while the other takes notes.
一個人將會發問，另外一個人將會做筆記。
- When the interview is over, have them look over the notes to ensure accuracy.
當採訪結束，讓他們過目，以確保準確性。

Questions:

問題

1. What is your position at your business and how long have you been working here?
您在此餐館/酒店工作有多久？您的職位是什麼？
2. Are you the decision maker of the seafood supplies in your business? Where do you order your seafood from and in what condition (live, frozen, etc.)?
您是否有參與選擇海鮮供應種類？您通常在哪裡購入海鮮以及購入海鮮的條件是什麼（鮮活, 冷凍等）？
3. Can you provide the names of the sustainable seafood supplies you often visit?
您能否提供您經常購入可持續海鮮的供應商名字嗎？
4. If some species in the sustainable seafood category are not available, how do you find the alternatives?
如果某些可持續海鮮種類突然缺乏，您會怎樣找到替代這些海鮮的產品？
5. What factors are you most concerned with when selecting a seafood supplier?
在您選擇海鮮供應商過程中，什麼是你最關心的因素？
6. Do you think environmental organizations such as WWF-HK have the most important role to change your seafood consumption behavior?
您認為環境保護組織，如香港世界自然基金會，對海鮮消費行為起到最大的作用嗎？
7. If yes, what roles should these organizations be more active in?
如果是，您認為這些組織應更積極扮演哪些角色？
8. Do you think the transform of your purchasing decisions on sustainable seafood will make any difference in your business revenue?
您認為購入可持續海鮮為重要菜單項目會對您業務收入有影響嗎？
9. How do you educate your staff so that they can help your customers understand and appreciate the tasty world of sustainable seafood?
您是如何教育您的員工，讓他們幫助您的顧客瞭解和欣賞可持續海鮮的意義和美味？
10. How do you share the commitment with your customers in the sustainable seafood movement?
您是如何以行動承諾提倡，而讓您的顧客支持可持續海鮮？
11. What motivates you to make the decision on implementing sustainable seafood on the menu? How do your customers think about it?
什麼因素促使您做出轉換成可持續海鮮菜單的決定？您的顧客有什麼反應？
12. Do you have any additional thoughts or comments that we did not already discuss?
您是否有其他我們沒有討論到的想法或者意見？



Appendix K: Survey for Hotels and Restaurants

We are students from Worcester Polytechnic Institute and we are conducting a study on sustainable seafood. This survey will help us gather your insights and identify the influencing factors of purchasing decisions of seafood businesses in HK. Your response is anonymous and will remain confidential. Thank you for your time!

我們是來自美國伍斯特工業大學的學生, 現在我們進行有關可持續海鮮的研究。您的見解將有助於我們確定影響餐飲服務商對海鮮的採購決策。您的回答是匿名的, 並且將會嚴格保密。謝謝您的寶貴時間!

1. Are you involved in selecting seafood for your restaurant's menu?

您有份參與選擇作為您的餐館菜單的海鮮嗎?

- Yes 是
- No 否

2. What percentage of your restaurant revenue comes from selling seafood?

在您餐廳收入中看, 有多少百分比是關於海鮮的菜單?

- 0-20%
- 21-40%
- 41-60%
- 61-80%
- 81-100%
- Don't know 不知道

3. What available resources would you like to utilize in order to create a more sustainable menu? (Check all that apply)

您會通過以下哪些可用資源來獲得更多關於可持續海鮮菜單的制定? (可多選)

- Educational tutorials
教育課程
- Seafood product database
海鮮產品資料庫
- Sustainable seafood recipe suggestions
可持續海鮮食譜建議
- In-person training courses
親自參加培訓教程
- Professional staff personnel with sustainability expertise
在可持續海鮮領域的專業人才的輔導
- Assistance with marketing technique
營銷技術幫助
- Other _____
其他 (請寫出)
- None
沒有

4. In your opinion, what criteria apply to sustainable seafood? (check all that apply)

在您看來, 什麼標準適合應用於可持續海鮮的定義? (可多選)

- Must be fish-farmed
必須漁場養殖
- Cannot be a threatened species
不會成為瀕臨物種
- Free of antibiotics
無抗生素
- Has organic certification
包括有機證書
- Has no preservatives
無添加防腐劑
- Caught by proper fishing methods
使用適當的捕獲方式
- Is more nutritious
富含營養

5. Which of the following seafood products do you think are sustainable?

您認為下列哪些海鮮是可持續海鮮產品?

- Pacific Salmon
太平洋鮭魚 (三文魚)
- Swordfish
劍魚
- Bluefin tuna
藍鰭金槍魚 (吞拿魚)
- Shark
鯊魚
- Scallop
扇貝

6. How would you describe your knowledge of sustainable seafood?

您會如何描述您對可持續海鮮的認識?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5
Don't know at all 完全不認識			Completely knowledgeable 完全熟悉	

7. Please rank the importance of the reliability of sustainable seafood products.

請評估可持續海鮮供應穩定的重要性。

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5
Not important 不重要			Very important 非常重要	

8. If Hong Kong were to provide more sustainable seafood, how would you rank the roles of the following stakeholders in influencing this movement? (Not important 1 – 5 Very important)

如果香港打算納入更多的可持續海鮮，請您評估一下以下利益相關者對這項行動所起的重要性。

(1-不重要，5-很重要)

	1	2	3	4	5
Hong Kong Government 香港政府	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seafood importers 海鮮產品供應商	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Senior management team of your company 貴公司的高層管理團隊	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caterers (e.g. restaurants/hotels/supermarkets) 餐飲服務行業 (如餐館, 酒店, 超市)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumers 消費者	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-governmental Organizations 非政府組織	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. If your restaurant menu incorporates more sustainable seafood, what would be some of your concerns? (Not important 1 – 5 Very important)

如果您的餐館將納入更多的可持續海鮮，哪些將會是您關注的問題？(1-不重要，5-重要)

	1	2	3	4	5
Low diversity of product 可持續海鮮品種少	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stability of sustainable seafood supply to Hong Kong 香港可持續海鮮供應的穩定性	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty in identifying sustainable seafood products 難以確定可持續海鮮產品	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High price of sustainable seafood products 可持續海鮮價格昂貴	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Freshness of sustainable seafood products 可持續海鮮的新鮮度	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generally low demand for sustainable seafood products 顧客對於可持續海鮮總體需求量低	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty in finding suppliers for sustainable seafood products 難以尋找可持續海鮮供應商	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainability performance of the company 可持續海鮮對該公司業績影響	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Greening the establishment public image 樹立公眾形象	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Demographic Questions (Optional) 背景調查 (可選填)

What type of cuisine do you offer to your customers?

您為顧客提供什麼樣的菜式?

Chinese Western Both Other
中國菜 西方菜式 兩種都有 其他

What is the capacity of your business? (seat counts)

您的企業規模有多大? (按座位數)

<25 25-75 76-150 151-250
 251-500 501-1000 >1000

Thank you for taking the survey!

謝謝您接受這份問卷調查!