

***Fishy Business: The Consumption of the Catch of the Day at  
Smith College***

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### ***Abstract***

The premise of my investigation was to examine the process of retail and distribution of seafood products to Smith College. I wanted to question both my own knowledge, as well as the campus's knowledge on the practice and consumption of aquatic species, and how exactly these species are arriving in our dining halls. To go about this investigation I interviewed two local experts in the seafood industry: Mr. Patrick Diggins, the Smith College Grocer, and Mr. Dan Webster of Webster's Fish Hook Restaurant in Northampton, MA. The results that I found from this investigation were that the basic practices and distribution on campus were generally regulated under guidelines of strict financial responsibility, while upholding Smith's ethical awareness to environmental practices in the purchasing these aquatic species. However, this being said, adhering to these regulations on campus was one where financial obligations frequently override these environmental responsibilities. This startled me since as a private, liberal arts college we should have the resources to comply completely with basic regulations that the campus has already attempted to abide by. This being said, regulations like those of the Monterey Bay Seafood Watch and other restaurant seafood guides are not difficult to adhere to completely, and at the very least the information on Smith College's distributors and the exact locations of these species catches should be accessible for consumers to observe and to be wary of on campus.

### ***Introduction***

In developing my research into the realm of the fishing industry I had to educate myself on the exact practices and processes that make up the distribution of these aquatic products (**Figure 1**). I found that the two main sectors of the fishing industry were concentrated around the *commercial sector* and the *aquaculture*. Each sector is comprised of various methods of

fishing and specifically the commercial sector has incorporated a variety of subsectors along with it.

### **Commercial Sector**

The commercial sector of the fishing industry is still the most popular and largest form of fishing around. The largest fish processing companies have their own fishing fleets, in addition to independent fisheries around the globe. In the end the products of this sector are sold wholesale to grocery chains or to intermediaries.

#### *Methods*

The commercial sector, in order to produce copious amounts of fish for international distribution, uses the following methods (Seafood Watch 2008)\* :

**Dredging** – This method involves fishermen dragging a heavy frame with an attached mesh bag—called a dredge—along the seafloor to catch bottom-dwelling shellfish. Some dredges have metal “teeth” along the base of the frame that act like a rake. As the gear is dragged along the seafloor, it stirs up shellfish, which flow into the bag. Water, sand or mud pass through the mesh. The durable bag is made of metal rings to withstand being dragged along the seafloor. Dredgers rake the seafloor for shellfish, mostly catching scallops, clams, oysters and other shellfish that live on the seafloor or burrow into mud or sand.

**Gillnetting** - A gillnet is a curtain of netting that hangs in the water at various depths, suspended by a system of floats and weights, or anchors. The netting is almost invisible to fish as they swim into the gillnet. The mesh spaces are large enough for a fish's head to pass through, but not its body. As the fish tries to back out, its gills are entangled in the net.

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\* All of which are not environmentally friendly practices

The size of a gillnet's mesh determines the type of fish it will catch: small mesh can catch small fish like sardines; while larger mesh can entangle fish such as salmon and cod, while allowing smaller species to pass through.

Longlining - Longliners attract fish with a central fishing line that ranges from one to more than 50 miles (80 km) long. This central line is strung with smaller lines of baited hooks, which dangle at spaced intervals. After leaving the line to “soak” for a time to attract fish, longliners return to haul in their catch. Longlines at different depths attract different species: pelagic longliners hang their hooks near the sea surface to catch open ocean fish, such as tuna and swordfish, while demersal—or “bottom”—longliners float their hooks just off the seafloor to catch fish that live on or near the bottom, such as cod or halibut.

Purse Seining – (Reason behind dolphin safe-tuna) A purse seine is a large wall of netting that encircles a school of fish. Fishermen pull the bottom of the netting closed (like a drawstring purse), herding the fish into the center. Purse seiners either haul the net aboard or bring it alongside the boat to scoop out the fish with smaller nets. Fishermen use this method to catch schooling fish, such as sardines, or fish that gather to spawn, like squid. The most popular fish caught by purse seines are tuna used for canning.

Trawling/Dragging - Trawlers tow a cone-shaped net behind a boat. They tow midwater trawl nets at various depths, ranging from just below the surface to just off the seafloor. They drag bottom trawl nets along the seafloor. Trawlers can add chains to the mouth of a net to stir fish like shrimp and flounder up off the seafloor and into the net. They can also add heavy tires—called “rockhoppers”—to help the net roll over rough, rocky seafloor areas without getting snagged. Trawling at different depths catches different animals:

midwater trawlers catch faster-swimming schooling fish such as sardines, while bottom trawlers catch fish that live on or near the seafloor, such as cod, flounder and shrimp.

### **Artisan Sector**

The artisan sector is a smaller, more humane system of fishing methods that revolve around human communities (fishing communities off of Cape Cod or Boston, for example) that practice more “traditional” methods of fish harvesting. Sometimes considered a more localized method of fish distribution and harvesting, many consumers purchase fish through these means to support local vendors, fishermen, and the environment. The methods of the artisan sectors consist of (Seafood Watch 2008):

**Harpooning** - Harpooning is a traditional method for catching large fish—and it’s still used today by skilled fishermen. When a harpooner spots a fish, he or she thrusts or shoots a long aluminum or wooden harpoon into the animal and hauls it aboard. Harpooners fish for open ocean swimmers and catch large, pelagic predators such as bluefin tuna and swordfish.

**Hook and Lining** – Hook-and-line fishermen use a pole (rod) and fishing line with one to several hooks. Handliners don’t use a pole—they simply hold a line in their hand. To attract fish, hook and liners use artificial lures or bait, “jigging” or jerking the line to simulate the motion of smaller fish. Sometimes they toss baitfish into the water to start a feeding frenzy among the fish. The catch is hauled in manually or with a mechanized reel. Hook and liners target a variety of fish, ranging from open ocean swimmers, like tuna and mahi mahi, to bottom dwellers, like cod.

**Traps and Pots** - Traps and pots are submerged wire or wood cages that attract fish and hold them alive until fishermen return to haul in the gear. Traps and pots may or may not be

baited, and they usually lie on the bottom—either singly or in a row. A rope runs from the trap or pot to a buoy floating at the surface, so fishermen can locate their gear. Traps and pots catch bottom-dwellers like lobsters, crabs and shrimp, or bottom-dwelling fish, such as sablefish or Pacific rockfish.

Trolling - Trolling is a hook-and-line method that tows fishing lines behind or alongside a boat. Fishermen use a variety of lures and baits to “troll” for different fish at different depths. Trollers catch fish that will follow a moving lure or bait, such as salmon, mahi mahi and albacore tuna.

### **Aquaculture**

This sector of the fish industry is based on the cultivation of aquatic organisms, also known as aquafarming (Fisheries and Aquaculture 2008), meaning the cultivation of aquatic populations under controlled conditions. Some examples of aquafarming include: algaculture (the production of kelp/seaweed and other algae); fish farming; shrimp farming, shellfish farming, and the growing of cultured pearls.

### *Methods*

Open Net Pens or Cages - enclose fish in offshore coastal areas or in freshwater lakes. Primary species under this practice are tuna and salmon.

Ponds - enclose fish in a coastal or inland body of fresh or salt water. Wastewater can be contained and treated. Used on shrimp, catfish and tilapia.

Raceways - Farmers divert water from a waterway, like a stream or well, so that it flows through channels containing fish. Farmers usually treat the water before diverting it back into a natural waterway. The government requires strict regulation and monitoring of on-site and nearby water quality. This practice is used primarily for rainbow trout.

Recirculating Systems - enclosed fish in tanks, where water is treated and recirculated through the system. Mainly any finfish species such as striped bass, salmon and sturgeon is capable of being raised with this process.

Shellfish Culture - Farmers grow shellfish on beaches or suspend them in water by ropes, plastic trays or mesh bags. The shellfish farmed using these methods are filter feeders and require only clean water to thrive. Most notable species are oysters, mussels and clams.

While aquaculture has been used in China since circa 2500 B.C. for the domestication of fish species (like carp), aquaculture has become a recent environmental movement in hopes to meet the high demands of fish harvesting and distribution internationally (Aquaculture 2008). In contrast to agriculture, the rise of aquaculture is a contemporary phenomenon. The stagnation in the world's fisheries and overexploitation of 20 to 30% of marine fish species has provided additional impetus to domesticate marine species.

### ***Methodology***

When constructing this investigation, I thought it best to take a perspective that I am most comfortable and aware of: one that is behind a lens. I wanted to use the medium of digital video as a means to allow absolute freedom in expression and communication on the various questions I had to both the Smith Community as well as to those that monitor the retail and distribution of seafood. I thought it best to begin with the professional sources and work my way out. In other words, I began my research asking generic questions about the seafood industry to those who I figured would understand it best – the grocers (see **Interview Questions**).

As such I compiled my basic ideology on how the process works and brought my thought to the interviews. My first interview with Patrick Diggins produced results that comprised on basic knowledge that was quite similar to my own. While Patrick has only been the grocer for

Smith College for the past three years, he attempted to answer my questions as concisely as possible on the varying components that Smith attempts to adhere to with purchasing aquatic species. Mainly his responses comprised of the view that Smith holds an ethical objective on the purchase of aquatic species, considering the guidelines of the Monterey Bay Aquarium Seafood Watch as a means to monitor which species are ethically safe to consume, both in their process of being purchased as well as the region that these species are being distributed from (Diggins 2008). The distributors of the college also specifically held this information: Black River Produce (Proctorsville, VT), Hartford Produce Company (Hartford, CT) and North Coast Seafood (Boston, MA - the only distributor on campus that monitors the production and distribution of these species as through the guidelines of the Massachusetts Division of Marine Fisheries). While he too was unaware of the specific locations that these fish were caught or raised from (whether foreign or domestic areas), he was willing to communicate as much information as possible to me on which specific popular species are purchased for the campus, specifically: Atlantic salmon, tilapia, swordfish, shrimp and canned, white chunk albacore tuna.

In retrospect, I was also able to interview Dan Webster, the owner of Webster's Seafood off route 9 in Northampton, MA. His responses were much more thorough in his awareness of both the process and product of the species he purchases for his restaurant. The most popular species that he noted for the restaurant are those of haddock (from Iceland), cod (only information is that it arrives frozen) and mussels (which are either from Maine, which is the preferred species he wishes to buy, or from Maryland, which are less succulent) (Webster 2008). Dan also mentioned that while the process of these seafood items was also unaware to him, when comparing his goods to those of Smith College I was able to analyze that comparing financial obligation to ethical treatment of these species, the price mattered more to the consumer rather

than the ethics. This is mainly due to customer taste and product expectations. Since most of the customers to the restaurant are part of an older crowd (specifically those over the age of 50), there is a large preference for specific species, especially that of haddock (Webster 2008). Taste and price is what matters to the consumer, not the practice involved in having it brought to the location.

### ***Results***

I used my interview responses as an opportunity to validate my investigations behind the controlled distribution of seafood to the local area, specifically as a means to research further on the environmental effects of the practices that these fish species result from, the locations of their distribution and what this means for the future of both the industry and the species themselves. While I wanted to divide my results to research both the effects of fish consumption locally with Smith, I found that simply focusing on Smith College itself was more than enough information that could cross over into facts about Webster's as well.

As Patrick mentioned before, the popular species purchased by the college are: canned, white chunk albacore tuna; shrimp; tilapia; salmon and swordfish. Why the college purchases these specific items mainly has to do with taste, availability, as well as consumer demand (Diggins 2008). I attempted to investigate on the possible distribution practices, as well as any information available to consumers on these specific species. I took into consideration Patrick's knowledge and the college's regulations on these species (found completely in the Monterey Bay Aquarium Seafood Watch Guide; see **Figure 2**).

### ***Species***

Canned, White Chunk Albacore Tuna – This specific species was the only one listed on the

Smith Dining Services website, canned in water. While most information surrounding

this species has been due to controversial fishing practices, such as the emphasis on distributing “dolphin-safe tuna”, this process was a result of perse seigning by larger commercial distributors. Regulations have put greater pressures on this species and Smith has had student concern in the past emphasizing the consumption of only “dolphin-safe tuna” on campus (Diggins 2008). Other concerns on mercury consumption have led to greater awareness of this species as a largely produced item; however, tuna is completely safe to eat so long as the average adult does not consume more than one to two cans of tuna per week (twice a month for children) (Worldwatch Institute 2006).

**Shrimp** – The largest distributor of shrimp international is China with a distribution gross of 70% of the world’s shrimp harvest (Larson 2005). The exact locations of the shrimp species distributed to Smith are unknown and arrive frozen. Most shrimp wild-caught or farmed are best if found in the U.S. or British Columbia, though imported shrimp are best to avoid – specifically those from China and South East Asia (Seafood Watch 2008).

**Tilapia** – Smith purchases farm raised tilapia that comes frozen from “abroad” (Diggins 2008). While farming of Tilapia is convenient and less expensive than other species (like salmon, for example), the best are farm raised in the U.S. and in South America (Seafood Watch 2008); it is important to avoid farmed tilapia from China and Taiwan, where pollution and weak management are common.

**Salmon** – Of all the species purchased at Smith College, farmed Atlantic salmon is the least preferred species to distribute on campus according to the Seafood Watch. This is primarily because of the rapid increase in salmon produced in the past decade, rising some 400% (Seafood Watch 2008)! These have resulted in some substantial

environmental impacts, for example, native species inheriting some various forms of sea lice that have targeted farmed Coho and Atlantic salmon becoming parasite/pathogen problems. Additionally, one of the biggest concerns is the amount of food required to raise salmon on farms - taking three pounds of wild fish to grow one pound of farmed salmon (Seafood Watch 2008).

Swordfish – though continually considered an endangered species, swordfish were merely one example of media misrepresenting the truth. In 1998, the Natural Resources Defense Council and SeaWeb hired Fenton Communications to conduct an advertising campaign to promote their assertion that the swordfish population was in danger due to its popularity as a restaurant entrée. - "Give Swordfish a Break" promotion was wildly successful (One Fish Community Directory 2006). However, there has been much controversy over the practices in catching these species, specifically the use of longline fishing that is the most common practice by industries while the preferred way to catch is to use harpoons and handlines (a type of hook-and-line gear) (Seafood Watch 2008).

Considering the varied locations on these species, mainly being purchased through means of aquaculture, and less than that of commercial fisheries, the various distributors provide Patrick with multiple points of view on which species of seafood Smith College consumers would want.

#### *Distributors*

Black River Produce (Proctorsville, VT) – While primarily the produce distributor of the college, Black River Produce does delve into seafood distribution occasionally, mainly on the purchasing of domestic, farmed products such as salmon, shrimp, etc. Specifically, Black River produce is used at both the faculty club and kosher kitchen in the Cutter/Ziskind

Dining Hall (Diggins 2008). The company also supplies produce for Middlebury, Dartmouth, and University of Vermont.

Hartford Provision Co. (Hartford, CT) – The only national distributor used by the college, I was dismayed to find that this was the only company with an accessible internet site. As such, HPC only distributes frozen products – tilapia, salmon and shrimp specifically (most likely coming from imported regions to the campus because of their massive array of investors).

North Coast Seafood (Boston, MA) – primary seafood distributor of the college and only company permitted to purchase marine species from Boston and Cape Cod fishermen directly (Massachusetts Division of Marine Fisheries); as such they directly monitor the catch of striped bass and cod specifically from the region. The main “fresh” seafood distributor, species that come through this company include swordfish, tuna, and other ocean caught specialty products (Diggins 2008).

### *Regulations & Policies*

Regulations and policies that are required to be met on campus are more guidelines than actual rules. While Dining Services does its best to provide the most ethically caught produce on campus, there is a substantial financial obligation that the college must invest in, specifically with a budget of \$2-2.5 million for groceries per year (Diggins 2008). The attempts to adhere to the Monterey Bay Seafood Watch offer a gracious guide on species that Dining Services remains constantly aware of, both for human and species health; however, so long as the community is unaware of the specific environmental effects that are becoming more frequently abundant with the overproduction of seafood, perhaps consumers would prefer to have the college purchase under more “green” practices now than ever.

### *Economic Impacts*

Fishing demand and numbers have reached greater amounts than ever before (**Figure 3**). As the demand has risen, so has the output and distribution of these aquatic species. Economically this industry has never been better thanks to higher advances in technology leading to greater access to more catches. In 2003, the total world production of fisheries product was 132.2 million tons of which aquaculture contributed 41.9 million tons or about 31% of the total world production (Larson 2005). While aquaculture has had an increase growth rate internationally of greater than 10% per year for most species, contributions to the total from wild fisheries has been essentially flat for the last decade (**Figure 4**). In the US, for example, approximately 90% of all shrimp consumed is farmed and imported. Between 1980 and 1997, the Chinese Bureau of Fisheries reports, aquaculture harvests grew at an annual rate of 16.7 percent, jumping from 1.9 million to nearly 23 million tons, making China the producer of over 70% of the world's farmed fish (**Figure 5**) (Larson 2005). While the economic standpoints of these species have been capable of providing sustainable resources to various countries, the environmental implication of these investments have caused concern.

### *Environmental Impacts*

Overfishing - Over the past 50 years, the number of large predatory fish in the oceans has dropped by a startling 90 percent along with popular species such as cod, tuna, flounder, and hake have been cut in half despite a tripling in fishing effort (Larson 2005). According to the U.N. Food and Agriculture Organization, the 4 million vessels scouring the world's waters are at or exceeding the sustainable yields of three quarters of all oceanic fisheries with the 10 most-fished species constitute 30 percent of the world's catch; seven of these having reached their limits and are classified as fully exploited or

overexploited throughout their entire ranges – species include: chub mackerel, skipjack tuna, largehead hairtail, two types of Peruvian anchoveta, Alaska pollock, Japanese anchovy, blue whiting in the northeast Atlantic, capelin in the North Atlantic, and Atlantic herring (Fisheries and Aquaculture 2008).

**Species Depletion** - The practice of catching larger and older fish first, leaving those small enough to escape from nets to breed, has over time reduced the average size of those caught. The effect on large predators is striking: for example, in the 1950s an average blue shark weighed 52 kilograms; in the 1990s, the average was 22 kilograms (Larson 2005). In addition, fish that breed late in life are sometimes pulled out of the water before they can reproduce. As a response to overharvesting, fish being to reproduce at earlier ages also contributing to the depletions in mass sizes of these species.

**Bycatch** - Some 8 percent of global landings are discarded, returned to the sea dead or dying (Larson 2005). Shrimp trawlers, for example, drag enormous nets over the seafloor and destroy delicate ecosystems while some 62 percent of their catch is thrown back in the water or killed automatically in the nets due to heavy pressure from debris and being dragged behind boats (Seafood Watch 2008). Longliners especially with thousands of hooks on central fishing lines of up to 50 miles (80 km) long are estimated to kill some 4.4 million sharks, sea turtles, seabirds, billfish, and marine mammals in the Pacific each year (Seafood Watch 2008).

**Distribution Issues** - Seventy-five percent of the total marine harvest is sold on international markets each year, accounting for some \$58 billion in exports in 2002 with Japan, the United States, and the European Union are the top importers (One Fish Community Directory 2006). This is mainly because the fish are caught in foreign seas or farmed in

other regions where industrial fishing fleets have been sent to empty the waters near developing countries. One example is off the west coast of Africa where large European and Japanese ships have displaced smaller boats, leaving little of the catch to feed local people (Larson 2005). Also local communities know to sell more to international traders mainly because it has become a better buy to support local communities through financial investments rather than food for the community (money over the fish). The irony is that governments subsidize the destruction of oceanic resources to the tune of \$15-30 billion each year (Larson 2005); for example, in 2001, subsidies paid to the fishing industry in Japan reached \$2.5 billion, equal in value to a quarter of the catch. U.S. fishing subsidies totaled \$1.2 billion, exceeding the worth of 30 percent of the U.S. catch.

Aquaculture Issues - Nonetheless, aquaculture will alleviate pressure on wild fish only if it is done wisely. Construction of near-shore fish farms frequently requires the razing of sensitive wetlands while the concentrated nature of aquaculture often leads to higher than normal levels of fish waste in the water (Seafood Watch 2008). Since fish waste is organic and composed of nutrients necessary in all components of aquatic food webs, in high amounts from near shore, high-intensity operations, farms can harbor diseases and these concentrated fish wastes can lead to harmful algal blooms and low-oxygen dead zones (Larson 2005). Making matters worse, farmed carnivorous fish can eat several times their weight in wild fish, which only adds to pressure on such resources. Though salmon, trout, shrimp, and prawns currently account for just 9 percent of world aquacultural output, production of these carnivorous fish is doubling almost every eight years, rapidly increasing demand on wild stocks (Larson 2005). Additionally, farmed species are unable to breed in the wild – issues like this are prevalent in Mediterranean

waters with Yellowfin tuna who are sold to international markets like those in Japan because of the higher profits earned as imports rather than local species (one Yellowfin tuna can go for over \$10,000 USD!) (“Kayaking” 2006).

### *Maintaining an Awareness*

Internationally organizations have become more concerned and have begun to enact regulations in efforts to prevent further depletions of species, habitats, and awareness of the health and policies of aquatic species distribution and protection. Informing consumers about the environmental effects of the fish they eat—whether from the sea or a farm—allows them to vote with their wallets for sustainable food choices. International groups like the Marine Stewardship Council, an independent global certification agency, has thus far certified 12 fisheries as sustainably managed, and 263 MSC-certified products are now available in 24 countries (Fisheries and Aquaculture 2008). In addition, a number of other organizations, including the Monterey Bay Aquarium and the National Audubon Society, are providing information for the public and restaurants on the status of aquatic species for consumption.

Major international organizations such as the Food and Agriculture Organization of the United Nations has promoted international policies and strategies aiming at sustainable and responsible development of fisheries and aquaculture in inland and marine waters. This includes providing discussion, information, legal and policy frameworks, codes and guidelines, options for strategies, scientific advice, training material, etc. (Fisheries and Aquaculture 2008). Other efforts include state run initiatives to organize policy in protection of local species such as Alaskan salmon, California kelp and Maryland blue crabs. Specifically, local initiatives and policies have a direct impact on the species that are available to consume at Smith College,

specifically through the Department of Fish & Game – Massachusetts Dept. of Marine Fisheries (which regulates the local catches that can be bought by distributors, like North Coast Seafood).

### **Discussion**

Considering that the above issues and concerns have developed much more rapidly as a result of scientific and economic evidence of species depletion and environmental concern, Smith College's awareness is rather unacquainted with the true issues at heart. Smith practices a die-hard belief in the purchase of local and ethically treated species for consumption on campus; however, without the proper discussion and reasoning behind these issues, there really is no issue to speak of on campus. Awareness amongst the administration vital, but to the students they more or less rather not consume the fish based on taste rather than on ethical or health reasoning. Students would rather not have to think about the food that we are consuming on campus – and if it is of concern then we might as well not eat it!

As Patrick Diggins, who is in his third year as grocer for Smith College, continues to develop his knowledge on the various aquatic species that the college orders for events and our dining halls, he is completely open to hearing more student feedback on what species should or should not be purchased. This can be based on taste (personal or recipes), health reasons, as well as practices that contribute to the harvesting of these species. It is important to monitor the health of both the human and aquatic species that we consume, not only for the safety of ourselves and the species, but all of the other effects that we have conveniently forgotten to observe under the distribution and consumption of these animals (economic, political, environmental, etc.). As these issues of fishing can be prevented so long as grocers, distributors and buyers abide by ethical codes and purchase fish that are raised or caught in a humane and healthy manner, we know here at Smith that our campus is open to new trends, and should

communicate this more openly with the college! While seafood products range on both cost and catch regulations, the concern of financial obligations over health and ethics is the substantial reason as to why concerns about this industry continue.

### *Proposals*

It is important for this campus to take a stand as a private institution and adhere to regulations that we are already trying our best to abide to. Because of the limitations that this school has set on the budgetary distribution of groceries to Dining Services, I think it is important to reconsider the best product at the best price, rather than cost over quality. While I was distraught in being unable to find out the exact locations of these said species, as well as which practices they are being harvested under, I find that now more than ever as a local consumer of aquatic species the college should adhere completely to current regulations regarding seafood consumption on campus.

- 1) The college should make more information about seafood products available online. This will include all species and the locations that they are being caught or farmed from, the practices by which these species are being harvested, as well as distributor information so students can monitor what products these companies sell.
- 2) Local Options:
  - a. Buying directly from various fish merchants under college contracts would support local fishing communities and offer constant monitoring of what practices they use to catch their fish, as well as the amount of harvest they bring in compared to larger, commercial distributors.
  - b. Purchasing from local fish farms in the area. There was a fish farm in Amherst, MA that distributed wholesale tilapia, but had to close down for personal and

financial reasons. However, local options may sustain local species in the ocean rather than depleting them at such a rapid pace.

- 3) Lastly, adhere to the Monterey Bay Aquarium Seafood Watch guidelines completely! As a private institution, we should be capable of adhering to these guidelines easily. It is disheartening to hear that large universities are capable of complying with the regulations completely (Diggins 2008). As a school always encouraging green and sustainable practices for the environment and ourselves, if such huge institutions are capable of listening to concerns over aquatic species – why not us?

### **Conclusion**

Seafood on campus is a substantially larger investment with the number of funds unable to match. It is important for Smith College to consider options, both from the administration and the student body, to reorganize our ocean species awareness in order to sustain a healthy and active community on campus. While investments in groceries seem like less of an effort to promoting Smithie involvement with the greater world, as food becomes scarcer it is vital to consider other options that can sustain our campus lifestyles as well as promote our awareness once we graduate.

This report has opened my eyes to a greater awareness of precious species that I consume. In order to consider my health, I must consider the health of the food that I choose to eat. As such I hope that this report will offer greater options and awareness to students here on campus on Dining Service's practices in purchasing aquatic species and future options to promote awareness of these species consumed on campus. Furthermore, we should be willing to change current regulations not only for ourselves, but also as an example for the communities outside of Smith that we hope to sustain and serve.

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## Tables and Figures

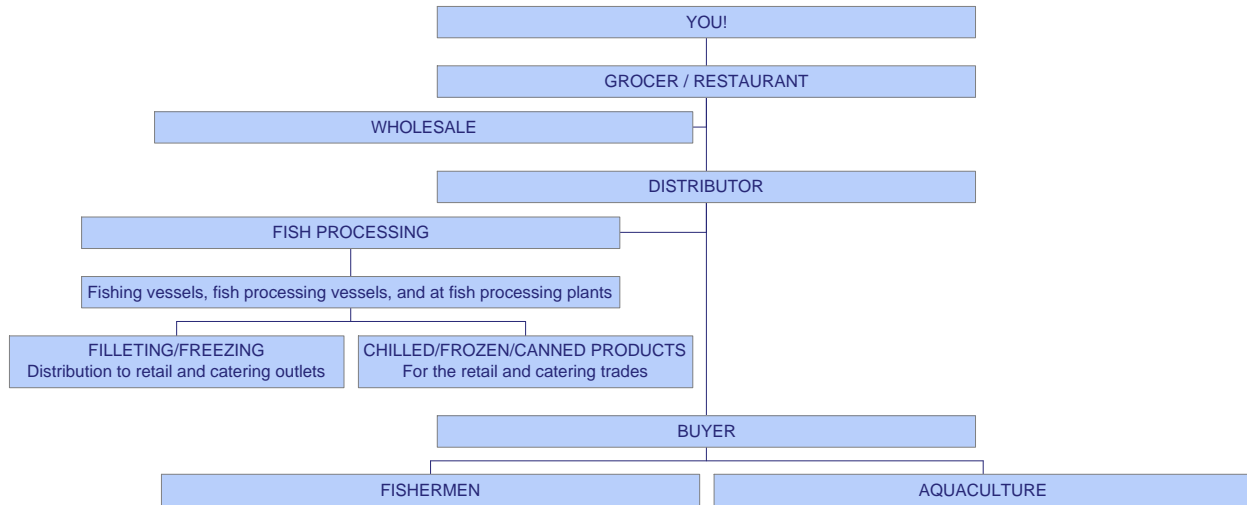
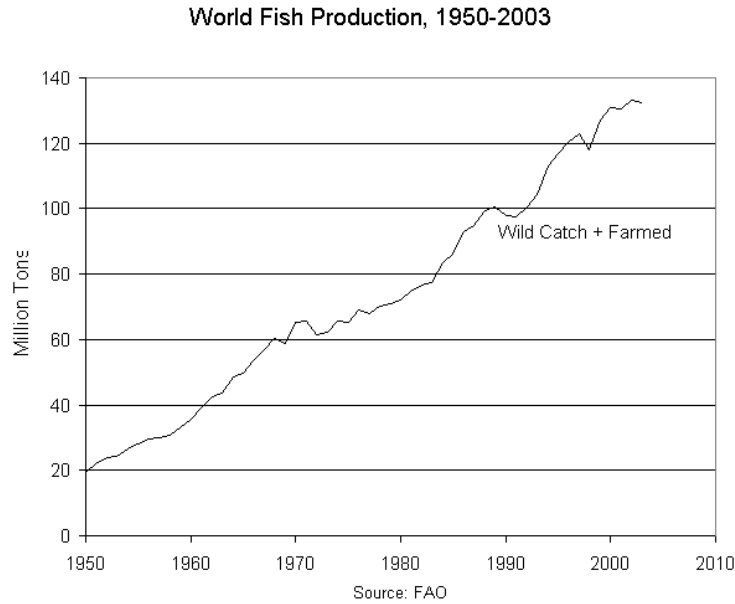


Figure 1) Original chart on the basic process and distribution of seafood from ocean to the consumer.

| BEST CHOICES   | GOOD ALTERNATIVES  | AVOID  | Support Ocean-Friendly Seafood  |
|--|--|--|---|
| Arctic Char (farmed)<br>Barramundi (US farmed)<br>Catfish (US farmed)<br>Clams (farmed)<br>Cod: Pacific (Alaska longline)+<br>Crab: Dungeness, Stone<br>Halibut: Pacific*<br>Herring: Atlantic/Sardines<br>Lobster: Spiny (US)<br>Mussels (farmed)<br>Oysters (farmed)<br>Pollock (Alaska wild)+<br>Salmon (Alaska wild)+<br>Scallops: Bay (farmed)<br>Striped Bass (farmed or wild*)<br>Sturgeon, Caviar (farmed)<br>Tilapia (US farmed)<br>Trout: Rainbow (farmed)<br>Tuna: Albacore (US*, British Columbia troll/pole)<br>Tuna: Skipjack (troll/pole) | Bass, Swai (farmed)<br>Clams (wild)<br>Cod: Pacific (trawled)<br>Crab: Blue*, King (US), Snow<br>Crab: Imitation/Surimi<br>Flounders, Soles (Pacific)<br>Lobster: American/Maine<br>Mahi mahi/Dolphinfish (US)<br>Oysters (wild)*<br>Scallops: Sea (Northeast and Canada)<br>Shrimp (US farmed or wild)<br>Squid<br>Swordfish (US longline)*<br>Tuna: Bigeye, Yellowfin (troll/pole)<br>Tuna: canned light, canned white/Albacore* | Chilean Seabass/Toothfish*<br>Cod: Atlantic<br>Crab: King (imported)<br>Flounders, Soles (Atlantic)<br>Groupers*<br>Halibut: Atlantic<br>Lobster: Spiny (Caribbean imported)<br>Mahi mahi/Dolphinfish (imported)<br>Monkfish<br>Orange Roughy*<br>Rockfish (Pacific)<br>Salmon (farmed, including Atlantic)*<br>Scallops: Sea (Mid-Atlantic)<br>Sharks*<br>Shrimp (imported farmed or wild)<br>Snapper: Red<br>Sturgeon*, Caviar (imported wild)<br>Swordfish (imported)*<br>Tuna: Albacore, Bigeye, Yellowfin (longline)*<br>Tuna: Bluefin* | <p><b>Best Choices</b> are abundant, well-managed and caught or farmed in environmentally friendly ways.</p> <p><b>Good Alternatives</b> are an option, but there are concerns with how they're caught or farmed—or with the health of their habitat due to other human impacts.</p> <p><b>Avoid</b> for now as these items are caught or farmed in ways that harm other marine life or the environment.</p> <p><b>Key</b><br/>           Northeast = Connecticut to Maine<br/>           Mid-Atlantic = North Carolina to New York<br/>           *Limit consumption due to concerns about mercury or other contaminants. Visit <a href="http://www.oceanaware.org/seafood">www.oceanaware.org/seafood</a><br/>           +Some or all of this fishery is certified as sustainable to the Marine Stewardship Council standard. Visit <a href="http://www.msc.org">www.msc.org</a></p> <p>Seafood may appear in more than one column.</p> |

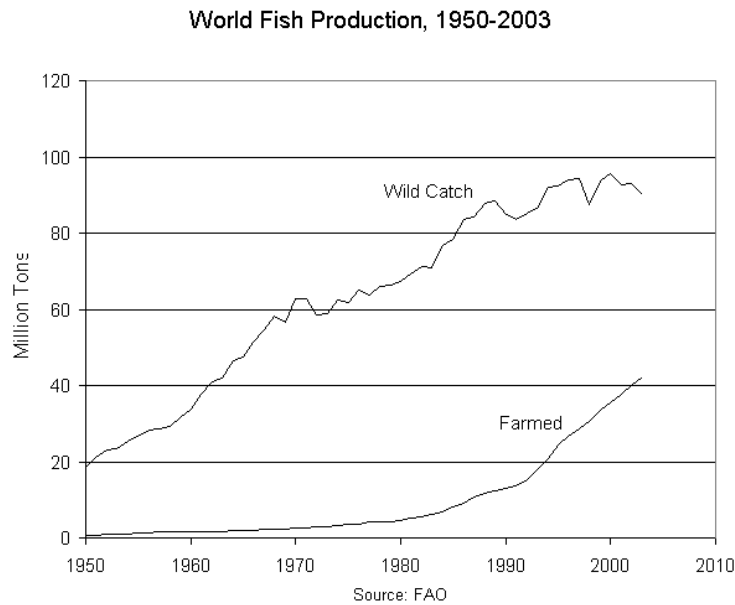
Figure 2) This is an example of the Monterey Bay Seafood Watch pocket reference that grocers (like Smith's Patrick Diggins) use to monitor which fish are ethically safe to purchase. These guide are updated annually with information on the latest release in seafood handling and distribution. The arrows point out the top five most popular species of fish purchased through Smith College.

Seafood Watch Program Homepage. 1999-2008. Monterey Bay Aquarium. April 29, 2008.  
<http://www.montereybayaquarium.org/cr/seafoodwatch.asp>.



*Figure 3)* Represents the total amount of fish production of both wild and farmed fish in amounts of millions of tons up to the year 2003.

Larson, Janet. "Earth Policy Institute Resources on FISH". *Earth Policy Institute*. 2005. April 29, 2008.  
<<http://www.earth-policy.org/Indicators/Fish/2005.htm>>.



*Figure 4)* Represents the division between wild and farmed fish produced in millions of tons up to the year 2003.

Larson, Janet. "Earth Policy Institute Resources on FISH". *Earth Policy Institute*. 2005. April 29, 2008.  
<<http://www.earth-policy.org/Indicators/Fish/2005.htm>>.

**World Wild Fish Catch, 1950-2003**

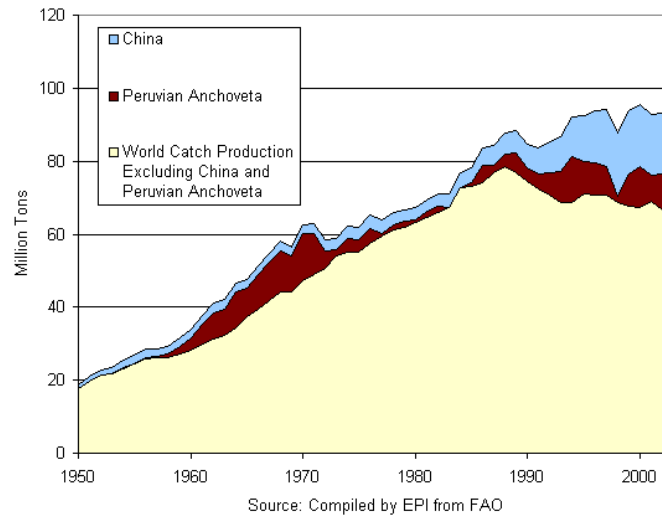


Figure 5) Represents the total world catch of fish species, isolating China and Peruvian Anchoveta to represent their individual catch in millions of tons per year.

Larson, Janet. "Earth Policy Institute Resources on FISH". *Earth Policy Institute*. 2005. April 29, 2008.  
<<http://www.earth-policy.org/Indicators/Fish/2005.htm>>.

### Interview Questions

*Smith College-Patrick Diggins*

- 1) What are the most popular species of fish that you purchase?
- 2) Who and where are your distributors?
- 3) What types of regulations and/or environmental stewardship protocols has Smith College placed when choosing distributors?
  - a. How have these regulations changed over the years?
- 4) How aware are you of the process it takes to purchase fish, and could you elaborate on this process?
- 5) What are your environmental views/morals when it comes to the harvesting and distribution of fish on the Smith College campus?

- 6) Do your distributors ever relay where their catches come from? Farm or caught in the wild? Imported or domestic?
- 7) What is the annual budget you are allotted as grocer? In other words, how much are you meant to spend on groceries overall, and what budget do you set aside for seafood purchasing (if you do)?
- 8) Do your distributors ever mention the types of methods used in catching Smith's seafood products (trolling, gill nets, bowie and pots, etc.)?
- 9) What is your opinion on buying locally?
- 10) How often have students ever been interested in the distribution or purchasing of seafood on campus?
- 11) How did you become the grocer on campus? (In other words, how did you become the fish buyer on campus?)
  - a. DO you like fish?
- 12) With the depletion of fish supplies over the years, what are your views on other sources of fish buying, i.e.-fisheries?
- 13) What type of moral obligation, in your opinion, is there to the capturing, selling, distributing and consuming of fish? In other words, how do you feel about the process of how fish is brought to campus and the type of outcome these purchases reflect on the college itself?
- 14) Final thoughts and personal opinions, as well as questions that you think that should be asked about this industry?

*Webster's Fish Hook – Dan Webster*

- 1) What are the most popular species of fish that you purchase?

- 2) Who and where are your distributors?
- 3) How aware are you of the process it takes to purchase fish, and could you elaborate on this process?
- 4) Are there any regulations (health, ethical, environmental) that have been, or you have, placed on this restaurant?
- 5) What is your connection with this restaurant and did you always want to be a fish buyer?
  - a. DO you like fish?
- 6) How often have students ever been interested in the distribution or purchasing of seafood at a restaurant?
- 7) What is your opinion on buying locally?
- 8) With the depletion of fish supplies over the years, what are your views on other sources of fish buying, i.e.-fisheries?
- 9) Being a specific “seafood” restaurant, what is your opinion on the idea of housing such a restaurant in an area that is a bit away from the ocean?
  - a. What types of customers do you usually see at the restaurant?
  - b. Any secret recipes you willing to share?
- 10) Final thoughts, personal opinions, as well as questions that you think should be asked about this industry?