

The Sustainable Seafood Movement – Bringing Together Supply, Demand and Governance
of Capture Fisheries in the U.S. and U.K.
to Achieve Sustainability

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Doctor of Philosophy
Final
December 2015

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Preface

I started my doctorate research in the autumn of 2011, after nearly seven years at the U.S. National Marine Fisheries Service. Growing up in Washington, DC, I had been in and around government institutions for most of my life. I started as a GS1 step 1 intern, the lowest possible entry position, at the age of 15 at the Department of Treasury. I watched, listened and tried to learn that summer as the Asian Tigers began melting down and I overheard calls from Indonesian Ministers. I would not understand what it all meant until my freshman macroeconomics class several years later at the Johns Hopkins University. Throughout my undergraduate and graduate education, I continued to work for the U.S. Federal government. I spent three years as an intern at the Department of Interior, working for the National Invasive Species Council. I then moved to the Smithsonian Natural History Museum with one of my bosses to run the interim Secretariat of the Global Invasive Species Programme. I was fortunate to be mentored by some incredible people who opened the door to amazing experiences in my late teens and early 20s. I participated on U.S. delegations to major international meetings and was awed by the processes and power of negotiations. I wanted this for a profession, as it was clearly a powerful way to contribute to society or so I thought. As I finished my Master's degree, I was lucky to secure a Foreign Affairs Specialist position at the U.S. National Marine Fisheries Service. I quickly learned when and where invoking the name of the U.S. government brought about positive change or outright derision. One of my first portfolios included working on tuna-dolphin and shrimp-turtle issues, the latter of which I continue to work on today.

I like to think that our on-going capacity building work to reduce sea turtle bycatch in shrimp trawls has been effective and that we have conserved turtles around the world. Shrimp-turtle has been one of the only cases successfully argued under the Article XX(g) of the General Agreement on Trade and Tariffs. I am proud of my colleagues' and my work to maintain and

strengthen this program, but I also know its limitations. I know that when we embargo some countries they switch their markets and simply do not care. And in other cases we are always nervously waiting to see if an embargo will take us back to Geneva.

As the High Seas Driftnet Moratorium Protection Act was amended during the 2006 Magnuson Stevens Fisheries Management and Conservation Act reauthorization, we were given a new set of mandates to “identify” and “certify” those countries that did not have a comparable bycatch reduction regulatory program to the United States’. For those of us in government, these types of mandates are always uncomfortable. We know that the United States program is far from perfect, but at the same time we know that we have an obligation to lead on conservation issues if recovery is to be achieved for highly migratory species.

The dynamic tension between our domestic conservation efforts and our international obligations has been both helpful and limiting over the years, and this new legislation presented a similar situation. Yet, as we went forward to implement it, our colleagues who had lived through the World Trade Organization disputes were cautious in how we would proceed.

We took a proactive approach and tried to do outreach and capacity building with fisheries that we thought might fit the legislative criteria. We wanted to address the problem before having to identify a nation. In some cases, countries engaged proactively and in others they did not. In one particular instance, we were eager to work with a highly developed country that has a very similar fishery but at that time did not take the same sea turtle bycatch measures. We thought that through bilateral dialogue and cooperative research we could address the issue without having to use the “stick” of the new mandates. However, the country in question was only willing to do what their fishing industry wanted. The fishing industry went through the motions of hearing our presentations, going through capacity building training and taking the equipment we provided. Yet when we left, the equipment

went in a cabinet and nothing changed. Ultimately, a requirement for data one year prior to identification, resulted in us not identifying the country, as their observer data was not analysed the year it was collected.

A few years later, this fishery was interested in obtaining Marine Stewardship Council (MSC) certification. Within a relatively short amount of time the measures we had been advocating for were adopted in regulation, a paid contractor gave the same training that we had provided for free a few years before and new equipment was purchased, the old having rusted and never been used. Why would a highly developed country, which we have a strong bilateral and trade relationship with, ignore the U.S. government but dramatically change its position for a private certification scheme? Was it about consumer demand, market access, or was there something more?

I embarked on my doctorate with my master's level understanding of seafood certifications and eco-labels. Inherent in these understandings was the power of the consumer. The consumer must be driving this, right? How else were non-state market-driven mechanisms sustaining themselves? My Oxford colleagues quickly disavowed me of this belief. Consumers had little to no role in driving these processes they said; didn't everyone know this? Yet, when I returned to my office in Washington, DC and talked with colleagues they clearly did not. This disconnect between those closest to the levers of power and those studying these market-based phenomena was very apparent. Government is rarely at the leading edge of change. But government inherently is a powerful and authoritative force. I write this doctorate to inform my colleagues and myself about what role we could play in relation to the actors in the Sustainable Seafood Movement. Governments are not part of a social movement, as they are often the elites that movements react against. But they can be influenced, changed and improved because of a movement.

Over the course of the last four years, this research has buoyed my spirit in the tremendous change and innovation occurring in American and European fisheries. It is not perfect and much more remains to be done, but if you reflect on the changes over the last decade the reduction in overfishing and the implementation of bycatch reduction technologies that has occurred is remarkable. I also see these advances spilling over to developing countries and believe that the trajectory is eking in the right direction.

I spend my days trying to solve gnarly bycatch issues. It is nearly impossible to do that without being disheartened by the slow incremental change or worse the inertia to change. This doctorate has allowed me to step back and see the bigger picture and recognise that there has been significant positive change over the last ten years. But, I finish this doctorate concerned as to whether this change has occurred without the knowledge or recognition of the public. I conclude this doctorate by calling for greater engagement of the public not as consumers but as citizens. For I fear that by assuming that the private governance rooted in the supply chain will incentivize fisheries sustainability, we overlook the responsibility that citizens have to participate in protecting their shared environment. Further, as the gridlock of Washington stalls one legislative agenda after another, it can only be citizens that demand change at the ballot box to reform the public governance system. Some would argue that this demonstrates the increasing need for private governance systems. I say that warrants a conversation. Government clearly has not improved the sustainability of U.S. fisheries alone and recognition needs to be given to the Sustainable Seafood Movement. Yet, citizens need to engage with any governance system of public resources, whether private or public and hold it accountable. I hope this doctorate sparks a conversation on how private and public governance systems are coordinated in a transparent and accountable manner. We need both. But we must have a dialogue about how these systems will coordinate and identify shared goals, rather than muddle through,

if we are to ensure long-term financial and societal support for these interdependent governance systems.

December 2015
Washington, DC

Abstract

The Sustainable Seafood Movement's "theory of change" is predicated on using markets to improve the supply of, demand for and governance of sustainable fisheries. Over four articles, this thesis will examine the implications of this approach. Article I evaluates the cultural model of seafood eco-labelling and demonstrates that while the theory of using market demand to motivate fishery improvements has been a powerful incentive, consumers have had a minimal role in incentivising that change. This is validated through semi-structured consumer interviews and structured surveys ($n=196$), which indicate consumers' general understanding of sustainability issues.

Article II examines the roles of actors in the Sustainable Seafood Movement in facilitating the growth of sustainable seafood products in the supply chain, thus explaining how in the absence of large consumer demand, certified sustainable seafood product offerings have continued to grow. Article III examines the private governance mechanisms that the Sustainable Seafood Movement has established in the supply chain and how these are rivalling, complementing and substituting those of state-led fisheries governance mechanisms. At the same time both private and public governance mechanisms continue to monopolise certain spaces, such as flag state authority. Greater coordination between these two governance systems is needed to facilitate additional sustainability gains and strengthen the resilience of these governance systems. When public and private governance efforts to improve the supply, demand and governance of sustainable seafood are looked at whole, as in Article IV, it is evident that consumers/citizens are minimally engaged. Lack of consumer/citizen engagement could lead to an undervaluing of these governance systems by society. Civic engagement organizations are needed to bridge these systems and facilitate citizen/consumer/steward engagement. Public accountability mechanisms are one means to better engage the public in both governance systems, so that sustainable fisheries

are realised by collective engagement of all actors.

I. Introduction

“Sustainable consumption has reached its own ‘valley of death’ – stuck between proof of concept and reaching mass markets and scale. Consumers today are offered greener choices through dematerialization, rentalized markets, renewable power, environmental standards and other innovations, but examples remain isolated. Current and past efforts are not yielding solutions at the right scale, creating a serious case of ‘pilot paralysis’ . . . While political and business leaders increasingly recognize the challenge, we are still not equipped to deliver change at scale. Transformation is needed, but we are stuck in incremental change (WEF, 2012).”

At the heart of this statement from this 2012 World Economic Forum report¹ is that today’s consumption levels are not sustainable. The report found there are three overarching barriers to scaling up sustainable consumption – demand, supply and rules of the game (governance). Demand is limited given “low consumer pull and engagement [for sustainable products] . . . often due to cost and convenience and confusion caused by mixed messaging and the proliferation of eco-labels.” Insufficient technology/infrastructure and complex supply chains limit scaling up the supply of sustainable products. Finally, with respect to rules of the game, as set by the private and public sector, perverse subsidies, limited trade incentives and a short-term perspective on symptoms rather than causes, hinder progress on sustainability (WEF, 2012).

While there have been private and public sector efforts to improve the sustainability of numerous supply chains, we are currently “stuck in incremental change.” As the report notes, neither governments nor markets have been able to deliver the change at the scale needed. This is particularly true in the context of marine capture fisheries.

This thesis will analyse over the course of four articles how the Sustainable Seafood Movement (movement), a social movement composed of environmental non- government organizations (ENGOS), retailers, foundations, chefs, food service providers, certification schemes, verification experts, academics, the media and informed consumers, in the United States and the United Kingdom has influenced the demand for, supply of and governance of

¹ 2012 World Economic Forum report entitled “More with Less: Scaling Sustainable Consumption and Resource Efficiency”

the seafood supply chain through the development of a non-state market driven governance regime. The ultimate goal of this movement is to improve the sustainability of marine capture fish stocks. Yet, non-state market driven governance (private governance) is limited in its transformative capacity without fisheries reform by governments (public governance) and coordination between these regimes. While substantial changes are occurring in the supply chain because of the efforts of the Sustainable Seafood Movement, these changes are occurring largely out of sight of the public. As a result, consumer engagement in efforts to transform unsustainable fisheries to sustainable fish stocks has been weak, as noted in the World Economic Forum report (WEF, 2012). This thesis will explore why this has evolved and what the implications of weak consumer demand for sustainable seafood are on public and private fisheries governance and, ultimately, fisheries sustainability. While there are currently marginal efforts at coordination between these governance regimes, much more is needed. This thesis will argue that greater coordination will likely occur only through greater public demand for accountability across both regimes.

II. Background and Literature Review

Status of Global Fisheries

Over the last two decades, there has been an increasing recognition that a significant portion of marine fish stocks have been overexploited due to excess capacity and fishing effort (FAO, 2012; WEF, 2012). The 2014 United Nations Food and Agricultural Organization (FAO)'s State of the World's Fisheries reports that, "global fish production continues to outpace world population growth . . ." but that there has been a "declining trend in global marine catch . . . since 1996, although with large fluctuations." Overall, the number of stocks fished at unsustainable levels was estimated at 29 percent in 2011, slightly improved from the peak of 33 percent in 2008 (FAO, 2014)." While there are

substantial declines of fish stocks around the world, the FAO notes the strong conservation and management action that has occurred in the United States. In 2012, the U.S. National Marine Fisheries Service announced that U.S fisheries had reached a historic milestone and were “turning the corner on ending overfishing (NOAA Fisheries, 2013).” The 2006 Reauthorization of the Magnuson-Stevens Fisheries Conservation and Management Act required the implementation of annual catch limits and associated accountability measures for all U.S. federally managed fisheries by 2011 (MSRA, 2007). By the end of 2011, 40 of the 46 fishery management plans had annual catch limits and accountability measures in place, and the remaining six would have them by the start of the 2012 fishing season. This was a historic step and sets the United States apart from most countries in its aggressive efforts to sustainably manage its fisheries.

On the other side of the Atlantic, the United Kingdom manages its fisheries in conjunction with the European Union. After growing public awareness about fisheries waste through discards, the European Union decided to adopt a zero discards policy as part of the 2013 Reform of the Common Fisheries Policy (EU, 2013b). In addition, for the first time, the European Union will manage by maximum sustainable yield (EU, 2013a). While significant issues remain in both regions, the United States and the United Kingdom, as part of the European Union, have taken a big step forward to improve the status of their fish stocks and set themselves as world leaders in fisheries management. This is not necessarily the case in other parts of the world and suggests a need for countries like the United States and the United Kingdom to find ways to incentivise more sustainable fisheries management through international cooperation as well as bilateral and multilateral trade mechanisms. While cooperative efforts have resulted in such international norms as the Code of Conduct for Responsible Fisheries, as well as several new international treaties to regulate high seas stocks (e.g., UN Fish Stocks Agreement, Port States Measures, etc.),

their implementation has lagged, leading to less than full compliance by all parties, and thus the sustainability of global fisheries stocks remains varied (Balton, 2010). As the most recent review conference of the UN Fish Stocks Agreement noted, the “overall status of straddling and highly migratory fish stocks remained poor. (Balton, 2010)”

What is a sustainable fishery?

While the sustainability of global fish stocks remains varied, improving the sustainability of fisheries is rapidly becoming a shared goal of a diverse suite of actors, including governments, retailers, chefs, food service providers, academics, ENGOs, certification schemes, verification experts, the media, and the fishing industry. However, what “sustainable” means in the context of fisheries is regularly debated. “Sustainable Development” was first defined by the Brundtland Commission, in 1987, as meeting “the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987).” Writing at the end of the 1980s, a time of financial turmoil in several Third World countries, the Commission highlighted throughout the report the need for economic growth. For instance, the Commission said, “in the longer term, major changes are also required to make consumption and production patterns sustainable in a context of higher global growth (WCED, 1987).” In essence, while the Brundtland Commission recognised the need for balancing poverty reduction, protection of natural resources and a “sustainable future,” at the heart of the findings was the need for economic growth. Economic growth requires increases in consumption and production. To have a “sustainable” future, the report suggests, we have to use our resources wisely, but not necessarily use less of them.

"Species and natural ecosystems make important contributions to human welfare. Yet these very important resources are seldom being used in ways that will be able to meet the growing pressures of future high demands for both goods and services that depend upon these natural resources (WCED, 1987)."

Some have criticised the Brundtland Commission's articulation of "sustainable development" as grounded in neo-classical economics rather than in ecological theory and practice. Regardless of the strengths and weakness of the Commission's report, it has had a lasting impact across multiple sectors; however in the fisheries sector, sustainable often is linked not with development, but rather with maximum sustainable yield (MSY).

Fisheries biologist Ray Hilborn, echoing Brundtland, defines sustainable harvest as the ability to "continuously harvest a population or ecosystem in such a way that it can be maintained in the foreseeable future (Hilborn and Hilborn, 2012)." MSY, now enshrined as a scientific principle, originated from efforts in a post-World War II era to rationalise U.S. international fisheries policy objectives into international fisheries management constructs (Finley, 2009). These U.S. objectives included protecting U.S. fishermen's rights to fish for tuna in the South Pacific and baitfish off the coast of South America, and upholding the principle of freedom of the seas. Using MSY, the U.S. State Department argued that fish stocks in these waters were under-fished and could be conserved without countries laying claim to expanded territorial waters. In this era, MSY was constructed to be the 'maximum production of food from the sea on a sustained basis year after year (Finley, 2009).' MSY was predicated on the idea that fish populations had "surplus" production that could be harvested, and that by monitoring fish catches, scientists would be able to see declines in the stock, reduce harvest and then the stock would rebuild, allowing for continued exploitation. This original construct of MSY would influence fisheries managers for decades and it is only in recent years that the notion of maximum *sustainable* yield, and how it should be calculated has been questioned.

In fisheries management, MSY is often used as an important indicator when setting quotas. Hilborn (2012) explains that, if people think that amount is a constant quantity,

their expectations are often not met, as populations have natural variability in them and it's not a guarantee that even with the best management system in the world, the harvest level will be the same year after year. Hilborn defines MSY as the “average of the catch that would be obtained when the stock is harvested at a rate that would maximise that average catch (Hilborn and Hilborn, 2012).” The U.S. National Marine Fisheries Service defines it as “the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics (e.g., gear selectivity), and the distribution of catch among fleets (NMFS, 2011).”

This second definition highlights a particular challenge to managing a wild-caught fish, upon what baseline or historical data record should the “largest long-term average catch or yield” be based? The knowledge of landings and stock status varies by stock and region of the world, often with much more robust data in the longer industrialised fisheries, like Europe and North America, and a paucity of data in Asia, Latin America and Africa (Worm and Branch, 2012). Further, the historical data for fisheries in many places in the world is limited to the last two centuries; because of this our perspective on fish stocks may be too shallow. This has led to what Pauly (1995) calls the “shifting baseline syndrome,” where each generation of fisheries scientists accepts as a baseline the status of stock size and species composition at the start of their career and so when they look at changes they only compare it over the course of their career instead of across our recorded knowledge of the species (Pauly, 1995). Pauly argues that anecdotal and historical knowledge of species and their ecosystems should be brought into fisheries management, so that managers avoid the “shifting baseline syndrome.” Shifting baselines lead to shifting expectations of what is a sustainable fishery and yield.

The Brundtland Commission (1987) made a specific reference to maximum sustainable

yield noting that “. . .most renewable resources are part of a complex and interlinked ecosystem, and maximum sustainable yield must be defined after taking into account system-wide effects of exploitation (WCED, 1987).” A few years later, Hilborn and Walters (1992) would write in their book “Stock Assessment in Fisheries Management” that stock assessments for new fisheries should not be done with MSY as the sole management objective, as it’s not possible to predict MSY in the early stages of a fishery and once you have sufficient data to identify what is MSY the fishery will likely have gone past it and need to reduce fishing pressure (Hilborn and Walters, 1992). As Finley (2009) describes, the original assumptions of MSY were that when the fishery passed MSY it would be economically unprofitable for boats to stay in the fishery and they would reduce their effort and thus the stock could rebuild towards optimization (Finley, 2009). However, as she and many others note, fisheries subsidies, in the form of government funding for fuel, boats, gear, etc. have distorted that signal and kept (overcapitalised) fishermen chasing fewer fish (with bigger boats and greater technology) well past the point of the fishery being economically or ecologically viable (Finley, 2009; Sumaila et al., 2010).

Over the last decade, the concept of single species management as dictated by MSY has started to shift to an ecosystem approach to fisheries management, which has been embedded in several international agreements, codes and resolutions (Francis et al., 2011). The FAO has defined an ecosystem approach to fisheries as, striving “to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries (FAO, 2003).” However, the implementation of ecosystem-based management is a work in progress in most countries, even where fisheries science is most developed. Further, while ecosystem-based management takes a more holistic approach to traditional fisheries management, in

practice it has been largely a biologically based concept and has not encompassed the social and economic systems in terms of sustainable development. Further, there are some, like Callicott and Mumford (1997) that argue that neither maximum sustainable yield nor sustainable development is “useful to contemporary, non-anthropocentric, ecologically informed biology.” Instead they argue for ecological sustainability, which they define as “meeting human needs without compromising the health of ecosystems,” rather than just future human generations (Callicott and Mumford, 1997). While writing from a perspective of wilderness protection in the terrestrial environment, as opposed to fisheries management, Callicott and Mumford propose a concept that has a similar characteristic as sustainable development in that they are suggesting taking into account both human and environmental factors in decision making. What is slightly different is that they are suggesting that ecological sustainability is the “maintenance in the same place at the same time, of two interactive ‘things’: culturally selected human economic activities and ecosystem health.” They argue sustainable development has too often meant expanding the market economy (Callicott and Mumford, 1997). From their perspective, sustainable development is situated in the world of neoclassical economics where the assumption is that as resources become increasingly scarce their price will rise. This in turn will create greater incentive for developing an alternative target resource either through substitution or technological development. They situate ecological sustainability as the next step in the evolution of preservationist thinking and in stark contrast to resource conservation or resourcism, which is at the heart of MSY.

As Callicott and Mumford describe, the preservation movement advocated for preservation of wilderness and open spaces for their intrinsic beauty, but over time it evolved from being driven by humanity’s spiritual and recreational needs to being driven by the species and ecosystems themselves. In contrast, resourcism primarily relates to the management of

natural resources for the benefit of humankind (Callicott and Mumford, 1997). Callicott and Mumford argue against this resourcism approach and suggest that both the economic and ecological bottom line should be the criteria by which human activities are judged.

While sustainable development is grounded in rationalised use, Callicott and Mumford's vision of ecological sustainability is grounded in terrestrial conservation and advocates not just for rationing of resources in the marketplace but for a holistic approach that includes permanent resource protection, such as a global biosphere reserve to improve forest conservation. In the marine conservation community, scientists like Callum Roberts urge increased marine protected areas to aid the recovery of the oceans and fish populations that depend upon them, as they see greater ecosystem recovery in closed areas than in areas continually fished (Roberts, 2012). On the other hand, Hilborn and others assert that there are ways to sustainably use fisheries resources, and while scientists can provide understanding of stock status and ecosystem impacts, some of these decisions will be based on social considerations, such as the impacts on coastal fishing communities (Hilborn and Hilborn, 2012).

This brief summary presents a broad overview of spectrum of thought surrounding how to interpret and implement sustainability in its various guises in the context of fisheries management. The evolution of fisheries management in the United States and United Kingdom remains closer to the Hilborn school of thought than the ecological sustainability vision that Pauly and Roberts advocate. But as discussed in the section on the status of global fisheries, sustainable fisheries management let alone ecosystem based management has yet to be realised in most fisheries.

Governance of Capture Fisheries – From Traditional Command and Control to Market Based Incentives

In the post-World War II era, fisheries management agencies were largely responsible for

developing new and expanding existing fisheries (Finley, 2009; Hilborn and Hilborn, 2012). This occurred through scientific explorations to identify unexploited stocks, grants to fishermen to buy boats, gear and/or fuel. This era of growth was considered by many to lead to the overcapitalization of fisheries such that there were too many boats chasing too few fish (Finley, 2009; Hilborn and Hilborn, 2012). By the end of the last century, there was increasing evidence of overfishing around the world (Roberts, 2012; Worm et al., 2006). One of the most notorious examples was the collapse of the cod fishery off Atlantic Canada (Finlayson and McCay, 1998; Hilborn and Hilborn, 2012). As a consequence, there were increasing efforts to try to understand and address the overfishing crises that were occurring globally and move towards more sustainably managed fisheries.

While traditional fisheries management tools continued to be implemented, such as landings quotas and restricted fishing seasons, government and non-governmental actors began looking to alternatives, such as market-based incentives on the supply and demand side of fisheries production.

On the supply side, individual fishing quotas, also known as individual transferable quotas, limited access privilege programs, and catch shares, have been implemented in some fisheries (Anderson and Holliday, 2007; Costello et al., 2008). Individual fishing quotas are government-sanctioned schemes that allow each fisherman to have an allocated portion of the specific fish quota each year within management areas. By guaranteeing a certain portion of the quota each year, the “race to fish” or “derby-style fishing” is eliminated. Moreover, fishermen who “own” their quota have more certainty about their catches and thus their income. Individual fishing quotas still require significant government administration, as the government needs to conduct the stock assessments, carry out the data analysis, set the quotas, enforce the quotas, administer the observer programs, and carry out environmental impact assessments and regulatory procedures. However, there is

evidence that in IFQ fisheries, fishermen have higher incomes due to limited competition and more predictable catches (Costello et al., 2008; Hilborn and Hilborn, 2012). Further, since the quotas are often transferable, fishermen can sell them on the market or choose to generate revenue from leasing the quota. These fisheries are often not overcapitalised since they are limited entry. Finally, IFQ fisheries are less likely to be overfished and/or collapse than non-IFQ commercial fisheries (Costello et al., 2008).

However, these fisheries are also associated with consolidation of the industry to those that are most efficient at fishing (Costello et al., 2008). This can often mean job losses for some. Further, who is eligible to receive the initial allocation of quota and how they receive quota has been the source of controversy in many fisheries (Ostrom, 2003). In some cases, quota was given for free to those fishermen at the start of the IFQ scheme, but those wanting to buy quota later had to buy into the scheme, putting them at an inherent disadvantage (Ostrom, 2003). Also, some governments have failed to track ownership of the quota, resulting in the quota being sold multiple times and being owned not by fishermen but instead by banks or investors (Einarsson, 2012). In other cases the quota became consolidated into the hands of a few fishermen. While controversy continues over the implementation of IFQs, many fisheries managers, scholars and fishermen have found that when implemented with an eye towards the community impacts, IFQ fisheries are often effective at ensuring a healthy fish stock and distribution of benefits to the local economy (Costello et al., 2008; Hilborn and Hilborn, 2012).

On the demand side, these market-based incentives included the development of seafood certification schemes for fisheries, consumer buying guides and sustainable seafood sourcing guidelines for retailers and food service providers to use their demand, or buying choices, to incentivise sustainable fisheries. Seafood eco-labels provide an easily recognizable mark on seafood products that were harvested in an environmentally

responsible manner. Evidence exists that in certain cases consumers (corporate and individual buyers) will reward an eco-labelled product with a higher price and/or preferred market access, and thus incentivise fishermen to behave in a more environmentally responsible manner (Roheim et al., 2011).

These labels and associated certification schemes can be administered by a government or by a non-governmental organisation; they can be aimed at consumers or retailer buyers.

There are three types of certification schemes and labels: self-certifying, which is usually done by the producer of the product; second party certifications where any industry association may certify companies in that sector for meeting certain criteria; or third party certification where an external body audits the producer and evaluates their performance compared to the criteria set forth by the owner of the label (Ward and Phillips, 2008).

Third party certification schemes are seen as the most rigorous (Ward and Phillips, 2008).

The criteria can also vary amongst the different labels and/or certification schemes.

Further, not all certification schemes are consumer facing.

Some are just for business-to-business exchanges, whereas others, like the Marine Stewardship Council or the dolphin-safe label, are third party certification schemes that have a consumer-facing label. Consumer buying guides or corporate seafood sourcing policies have aided in mainstreaming these products in the supply chain by giving higher ratings to eco-labelled product or product verified as sustainably produced.

Dolphin-safe tuna was one of the first examples of governments and non-governmental organizations using a seafood certification scheme with a consumer-facing label to compel sustainable fisheries management (Baird and Quastel, 2011). The lessons from these efforts would inform the future development of seafood certification schemes. A brief history of the issue is provided here.

Dolphin bycatch has been documented in the Eastern Tropical Pacific since the 1950s,

when U.S. fishermen recognised that yellowfin tuna in this region school underneath dolphin pods. Fishermen found that setting their purse seines on dolphin pods to capture the yellowfin tuna swimming below was a highly effective fishing technique. This technique, however, resulted in very high levels of dolphin mortality (approximately 6 million since the fishery began in the 1950s), which caused a significant decline in the stock (Baird and Quastel, 2011; Perrin et al.; Teisl et al., 2002). However, it was not until 1988 that major policy changes occurred. That is when an American biologist from Earth Island Institute, working undercover as a crewmember on a large Panama-flagged purse seiner, filmed dolphins dying in the purse seine nets (Baird and Quastel, 2011; Teisl et al., 2002), which when broadcast on television brought tremendous public outrage. Over the next few years, major policy, regulatory and legislative changes would ensue resulting in the establishment of dolphin safe eco-labels. One of these included, a dolphin-safe label created by the three largest U.S. tuna canners. This prompted other canners to follow suit. Given ENGO and public pressure concerns about truth-in-labelling, the U.S. Congress passed the Dolphin Protection Consumer Information Act of 1990 to create a clear standard and corresponding label that American consumers could recognize (Baird and Quastel, 2011; Teisl et al., 2002). In addition, when the ENGOs felt that the U.S. government criteria for dolphin-safe was not sufficiently rigorous, they created their own, such as the Earth Island Institute dolphin-safe label (Baird and Quastel, 2011; Ward and Phillips, 2008). Earth Island Institute established agreements with certain tuna processors to ensure that all processing, storage and independent facilities and procurement records were available for independent monitoring of all their tuna product, not just product caught in the Eastern Tropical Pacific, which was the focus of the U.S policy at first. The U.S. dolphin-safe label would become the subject of a more than two-decade trade dispute between Mexico and the United States that continues today. Mexico would assert

that, since their product did not meet the U.S. definition of dolphin-safe and thus was not eligible for the label, they had diminished market access since many U.S. retailers, pressured by ENGOs and the public, were only willing to carry dolphin-safe tuna. Mexico argued that the United States violated the World Trade Organizations' (WTO) Technical Barriers to Trade provisions of the General Agreement on Trade and Tariffs.² This trade dispute would strongly influence future market-based efforts and make governments around the world reluctant to establish their own seafood eco-labelling programs for several years, thus providing an opening for non-governmental actors to define the landscape for seafood eco-labelling (Baird and Quastel, 2011; Ward and Phillips, 2008).

The Evolution from Government led Fisheries Management to Network Governance

The rise of market-based incentives in fisheries management is emblematic of the evolution in fisheries management over the last few decades from one of traditional command and control solely by governments to one that involves non-harvest rights stakeholders to a much greater extent. Some scholars, such as Mark Gibbs (2008), have argued that many Western fisheries management regimes are increasingly governed through a network governance approach (Gibbs, 2008). Gibbs describes a network governance approach as having multiple legitimate institutions that are participating in fisheries management. Examples of these stakeholder institutions include environmental non-governmental organizations, like World Wildlife Fund (WWF) and the

² The tuna-dolphin trade dispute between the United States and Mexico continues today. The most recent round of WTO appeals found in 2012 that the United States violated the General Agreement on Trade and Tariffs trade rules and discriminated against Mexico, particularly since the United States did not allow Mexican tuna captured through setting on dolphins to be labeled "dolphin-safe". In 2013, the United States introduced measures to address the WTO's findings. Mexico felt these measures were not compliant with the WTO's findings and requested a WTO compliance panel. The compliance panel found that the United States could continue to label dolphin-safe tuna as that tuna not caught from setting on dolphins. However, the panel found that the different approaches that the United States has to verification and tracking across tuna fisheries was not compliant, as it placed undue burden on Mexico. Now either country can appeal the report or agree to it. The likelihood is that the dispute will continue for several decades more, as both sides have vested interests to maintain.

Environmental Defense Fund (EDF). Their involvement goes beyond traditional consultation to involvement in the regulatory process itself, to the extent that these institutions are actively participating in fisheries management. For instance, EDF works directly with fishermen to improve their fishing practices and as well as advocating for improved government regulation. Gibbs argues that because of globalization these institutions are increasingly seen as stakeholders with increasing influence in fisheries management (Gibbs, 2008). However, this is an incomplete explanation as to why the role of non-government actors in fisheries management has increased.

Starting in the mid-1990s, large ENGOs, often with the support of foundations and large donors, recognised the substantial decline in global fish stocks and the inaction of governments to address this decline. And thus, began to develop their own initiatives to address the situation. ENGO initiatives ranged from engaging more directly in fisheries management consultation processes to advocating for governments to use the power of trade restrictions and market based incentives to encourage sustainable fishing practices through the use of eco-labels and IFQs, to developing their own initiatives within the seafood supply chain (Conservation Alliance for Seafood Solutions, 2008; Packard, 2007; 2012).

For example, in 1996 one of the most significant initiatives was launched through a partnership of Unilever and the WWF to establish the Marine Stewardship Council (MSC). Unilever at the time owned two large frozen fish brands – Birds Eye and Igloo. With the collapse of Atlantic cod in Canada in 1993, Unilever recognised that it needed to ensure the long-term sustainability of its products (Ward and Phillips, 2008). With the MSC, they sought to revolutionise the marine capture fisheries sector by incentivising responsible fishing practices through a market-based incentive instead of a regulatory one, given that the existing regulatory regimes had failed to stem over-capacity and overfishing in key global fisheries. Fishery companies would pay to be assessed by the independent third

party and if they met the sustainability standards would be eligible to use the MSC logo in their marketing and labeling (Cummins, 2004; Ward and Phillips, 2008). This label would then allow consumers to “buy with confidence” when seeing the MSC label, as they could trust that it was a certified sustainable seafood product. Initially, it was also hoped that this eco-label would give fishermen a market advantage over their competitors (Cummins, 2004; Roheim et al., 2011).

In addition to consumer-oriented labelling programs, like the MSC, in 1999 Audubon published its first consumer seafood-buying guide. These guides used a stoplight- based system (green for good, yellow for caution and red for avoid) to advise consumers which fish were environmentally responsible to eat and which ones were not. Shortly thereafter, the Monterey Bay Aquarium and the New England Aquarium in the United States launched their own guides too. Seafood guides would later be launched in the United Kingdom, Australia, New Zealand, and Canada, just to name a few countries (Ward and Phillips, 2008). The message was clear: non-government actors, such as ENGOs and forward thinking corporations, were willing to lead in the absence of government intervention. As more actors coalesced around the need for sustainable capture fisheries, the coalition for the Sustainable Seafood Movement was laid. The coalition of actors supporting this social movement included ENGOs, retailers and food service providers, chefs, academics, certification schemes, verification experts, the media, informed consumers and parts of the fishing industry. The movement aimed to directly influence the supply chain and educate consumers to make environmentally responsible choices and so revolutionise the fisheries sector via the markets (Jacquet et al., 2009; Konefal, 2013; Sutton and Wimpee, 2008). Gibbs is accurate in recognising the network governance phenomena that has emerged in Western fisheries management over the last two decades, but his explanation of why is incomplete. Social movement theory and non-state market driven governance theory offer

a more complete explanation. As will be discussed in more detail in Articles II and III, Tarrow (2011), Cashore (2002) and Auld (2009) provide greater insight into the factors that contributed to the emergence of network governance in fisheries management. Cashore's (2002) identification and analysis of the non-state market driven governance phenomena that developed in several sectors, including fisheries, over the last two decades is critical to explaining this network governance phenomena in fisheries (Cashore, 2002; Cashore et al., 2003). Non-state market driven governance occurs in the supply chain rather than traditional government settings (Cashore, 2002). In this setting, actors, like the MSC and ENGOs, are granted authority to evaluate the sustainability processes of other supply chain actors, such as retailers, because of their independent status, moral suasion, and the assessment and guidance services they provide. Compliance with this regime occurs through market incentives and associated evaluation processes. Failure to comply can result in potential loss of market access. Nearly two decades after the MSC was launched, the Sustainable Seafood Movement has developed a suite of non-state market driven governance tools to incentivise sustainable seafood production through the supply chain, such as seafood certification schemes, seafood wallet cards and retailer sourcing policies. With this greater authority and legitimacy in the supply chain, these actors are increasing their authority and legitimacy in public governance processes too.

III. Research Questions and Aims

In the following four articles, this thesis will explore these research questions:

- a. Do market-based tools, particularly eco-labels, incentivise consumer participation in improving the sustainability of seafood supply chains?
(Article I)
- b. What is the Sustainable Seafood Movement? Who are the key actors,

what roles do they play and what tools are they using to mainstream sustainable seafood in U.K. and U.S. markets? (Article II)

- c. What are the implications of weak coordination between non-state market driven governance (private governance) and public governance for fisheries sustainability? (Article III)
- d. How can public and private governance regimes be better aligned to ensure fisheries sustainability through the active participation of the public? (Article IV)

In addressing these questions, the following aims and objectives will be pursued:

- a. To identify obstacles to consumers' understanding and responding to sustainable seafood messages;
- b. To probe the roles of members of the Sustainable Seafood Movement and explore the tools they have used to develop a non-state market driven governance regime in the seafood supply chain;
- c. To analyse the U.S. and U.K. regulatory regimes (public) in comparison to the non-state market driven governance regime (private) of the seafood supply chain and the implications of weak coordination;
- d. To identify a way that the public and private governance regimes can be better aligned in order to deliver sustainable fisheries in an open and accountable way through public engagement.

IV. Research Approach

To explore the research questions and aims, the “theory of change” or conceptual model that has been the focus of major funders of the Sustainable Seafood Movement will be used as the framework for analysis. This theory of change is best captured in the Packard

Foundation's 2012 Marine Fisheries Subprogram Markets Transformation Strategy.

“The markets transformation strategy rests on the theory of change that consumers and businesses that demand sustainable seafood can motivate fisheries to improve their management practices to be able to sell their products into these markets. With time, businesses and fisheries can also become advocates for fishery policy changes to help level the playing field so that poorly managed fisheries do not undercut the market (Packard, 2012).”

In essence this mirrors, the key parameters that the aforementioned World Economic Forum report identified as barriers to scaling up sustainable consumption – supply, demand and governance. And while, the Sustainable Seafood Movement, as will be discussed in Article II, is ultimately seeking sustainability in global fisheries this can not occur without sustainable consumption levels which is ultimately dependent on sustainable supplies, sustainable levels of demand and governance regimes that compel sustainable practices. Through the probing of this conceptual model, the underlying assumptions of improving supply, demand and governance to achieve sustainable fisheries will be challenged through the comparison of the cultural models held by movement actors. This thesis will demonstrate that while the supply of sustainable seafood has dramatically increased, the demand by consumers has lagged behind (Article I).

Though there is some level of consumer recognition of MSC and other sustainable seafood labels (MSC, 2012), whether consumers understand what it stands for and whether they believe their purchase makes a difference varies considerably (Article I). Given the weak engagement of consumers, Article II will examine the social movement known as the Sustainable Seafood Movement, to understand how sustainable seafood products have increased in the market in spite of the lack of large consumer engagement. By exploring the actors that compose the Sustainable Seafood Movement, the roles they play in the movement, and how their shared cultural models have led to shared objectives, the evolution of market driven governance of commercial marine capture fisheries can be better understood as part of the global seafood system. Article II will also identify emerging challenges to the continued effectiveness of the Sustainable Seafood Movement.

In doing so, it sets the stage for Article III's analysis of coordination problems between private governance and public governance, which are inhibiting the scaling up of sustainability practices in capture fisheries (Article III). While other studies have looked at supply, demand or governance, few have analysed how the Sustainable Seafood Movement has influenced all three factors and identified the strengths and weaknesses in this emerging governance model. Article IV brings together the conceptual and cultural models from the three previous papers to highlight the differences between the two. In doing so, the strengths and weaknesses in implementing this theory of change are exposed. Ultimately, without accountability of both private and public governance systems through increased public engagement the ultimate goal of sustainability in all fisheries may not be achieved (Article IV).

Theoretical Approach

Drawing on the literatures relevant to fisheries management, human geography, sustainability, ecology, conservation, governance, market-based incentives, consumer behaviour, and social movements, this thesis seeks to take an interdisciplinary approach to analyse the aforementioned research questions and aims from both natural and social science perspectives. Ultimately, the contribution of thesis is to provide a more holistic cultural model and practical framework than exhibited in current approaches to governing fisheries sustainability, which can constructively inform the work of public and private governance actors.

Methods

While the thesis is composed of four distinct articles, a core methodology is employed across them. Taking a qualitative mixed methods approach, first a review of the relevant peer-reviewed and grey literature was undertaken. Second the geographic areas for case

studies were identified. Then qualitative and quantitative surveys were conducted in those areas. After the compiling the results of those surveys, appropriate quantitative and qualitative methods were employed to analyse the data. Conceptual models of the key factors of the theory of change – demand, supply and governance – were identified in peer-reviewed and grey literature. The qualitative data was then used to develop cultural models for each of these factors. And then the conceptual and cultural models were compared for areas of agreement and disagreement.

Each of the articles has its own methods section, however the rationale for selection of the geographic case studies and historical overview of the development of conceptual models is provided here since it underpins the entire thesis. After the explanation of this rationale, a brief summary of each article’s methods follows.

Case Studies

Using the United States and United Kingdom as the case studies for this thesis provides an opportunity to compare two different governments, which share a common language and ocean, have a long standing “special relationship,” and have a regular exchange of thought leaders. In the context of the Sustainable Seafood Movement, ENGOs in the two countries often share ideas and approaches such that advocacy campaigns spillover between the two countries, (e.g., Greenpeace supermarket rating report started in the U.K. and once successful was expanded to the U.S.). Finally, the key foundations, like Packard, that were instrumental in the formation of Sustainable Seafood Movement, focused first on U.S. and European markets. As noted in the 2006-2011 Packard Strategy for Market-Intervention Tools to Conserve Marine Fisheries, “Our subprogram seeks to change fishing practices and fisheries policies by focusing initially on U.S. and European markets, the fisheries that supply those markets, and the regulations that govern activities on the fishing grounds

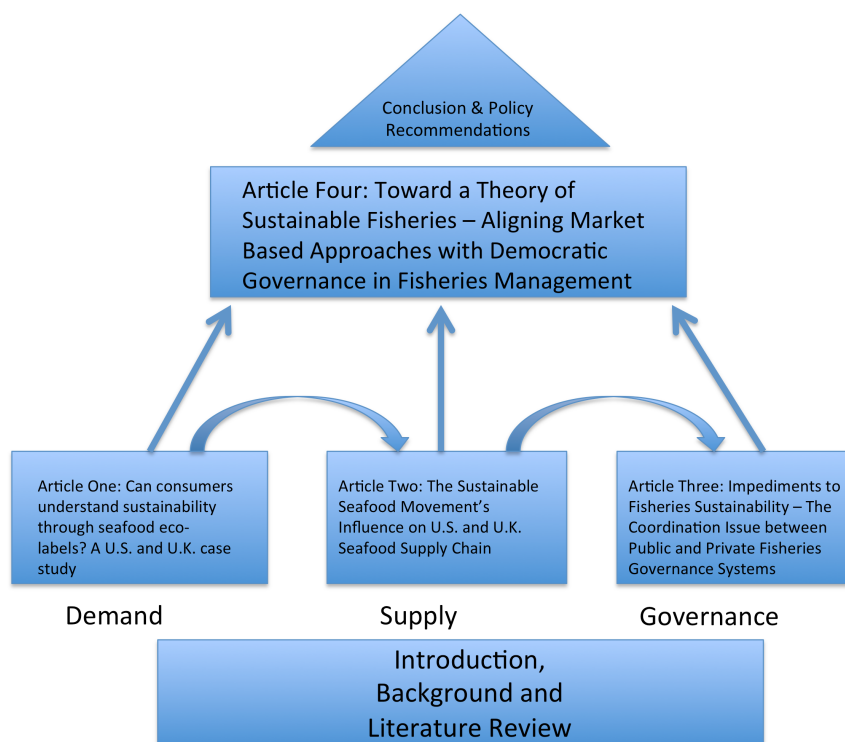
(Packard, 2007).” By incentivising change in the U.S. and U.K. supply chains, change is incentivised in other countries that supply those markets, thus influencing nearly every major fishery and ocean in the world. While there are many similarities between these two countries and markets, the scale of their markets and their different governments, allow for sufficient contrast to draw lessons on the impact of the Sustainable Seafood Movement in each country.

Cultural Models

A cultural model is an informants’ understanding of how a process or phenomenon operates, be it climate change, sustainable fisheries management, or some other aspect of nature or culture. Cultural models are shared among individuals but often not completely; there may be variation within and between groups. Elements of a cultural model can be abstracted from interviews and patterns of discourse evident in transcripts or other documents, such as common motifs that multiple members of the same group express when speaking about an issue. As Holland and Quinn (1987) state cultural models are “[p]re-supposed, taken-for-granted models [schemata] of the world that are popularly shared by the members of a society and that play an enormous role in their understanding of that world and their behaviour in it (Holland and Quinn, 1987).” Kempton (1996) found that when people’s cultural models diverge amongst them or diverge from the mental models that elites, such as scientists, hold it offers insight into why some actors support environmental action while others do not (Kempton et al., 1996). Drawing on the inductive methodology described in Naomi Quinn’s “Finding Culture in Talk: A Collection of Methods” (2013) and Kempton et al’s “Environmental Values in American Culture,” (1996) the qualitative survey data for this thesis was analysed and coded in NVivo 10 to develop a cultural model (Kempton et al., 1996; Quinn, 2013). Through this analysis of transcripts of semi- structured interviews with experts in the Sustainable Seafood Movement, and

discourse analysis of public meeting transcripts and news articles, cultural models begin to emerge regarding peoples’ understanding of seafood sustainability. These cultural models, which may overlap or vary to a significant degree among respondents, are compared with the original conceptual models put forward in the academic and grey literature concerning how sustainable seafood sourcing and certification policies incentivise sustainable fisheries. Through a comparison of the different models, supported by the quantitative data collected, an analysis is undertaken to understand the extent to which there is cultural consensus on different parts of the sustainability paradigm (supply, demand and governance) and how these may lead to sustainable fisheries. The concluding article identifies missing factors from the sustainability paradigm that if not factored in could have the potential to undermine efforts to achieve sustainable fisheries.

Overview of Thesis and Summary of Methods by Article



Title -- The Sustainable Seafood Movement -- Bringing Together Supply, Demand and Governance of Capture Fisheries in the U.S. and U.K. to Achieve Sustainability

This thesis is composed of an introduction, background, literature review, four articles and a conclusion. The introduction, background and literature review give a broad overview of the sustainability issues in marine capture fisheries and the governance approaches that have been used by governments and non-government actors. Article I then analyses the original conceptual model, as depicted in peer-reviewed and grey literature, of the market-based tools, e.g. eco-labels and seafood guides, vis-à-vis the role of consumers and compares it with the present reality. One hundred and sixty- eight consumer interviews are analysed to depict U.S. and U.K. consumers' cultural model of sustainability. Article II draws from a review of peer-reviewed and grey literatures as well as interviews with 27 actors in the movement from the U.S. and the U.K. to explore the development of the Sustainable Seafood Movement and its influence on the supply chain. This analysis probes the different cultural models of sustainability that have developed among actors and how these differences may impact the movement in the future.

Article III contrasts the private governance cultural models developed in Article II with public governance models as derived from an analysis of peer-reviewed and grey literature, including government documents, related to fisheries governance in the United States and the United Kingdom. The article identifies the coordination issues that are inhibiting greater sustainability improvements in each market. Finally, Article IV brings together the conceptual and cultural models from the previous articles -- demand, supply and governance -- to identify whether they can be effectively aligned to ensure sustainable fisheries over the long-term. As Article IV and the thesis conclusion find, the original conceptual model of the theory of change is no longer appropriate. Rather a model that includes greater accountability and citizen engagement is needed. Sustainable fisheries will be achieved when the public is engaged as consumers and citizens, so that they are ocean advocates both in the grocery store and at the polls. It is argued that highly visible and

transparent coordination and cooperation between public and private fisheries governance systems, which ensures only sustainable seafood in the supply chain, is the best means to facilitate public engagement and move sustainable consumption efforts from a “pilot paralysis” in the “valley of death” to a meaningful governance regime that ensures sustainable fisheries. In the end the actors in these regimes must work cooperatively and collectively to ensure sustainability in marine capture fisheries – a public good -- for people today and tomorrow.

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Can Consumers Understand Sustainability through Seafood Eco-Labels? A U.S. and U.K. Case Study

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Received: 10 August 2014; in revised form: 14 October 2014 / Accepted: 23 October 2014 /

Published: 18 November 2014

Abstract: In the United States and the United Kingdom, over the last decade major retail chains have increasingly publicised their efforts to supply sustainably sourced and eco-labelled seafood. Debate exists over the extent of consumer demand for this product. Seafood eco-labels purportedly resolve the information asymmetry between producer and consumer, allowing consumers who care about sustainability to easily find and purchase these products. This paper discusses the idealised model of seafood eco-labelling in promoting sustainability and presents results of U.S. and U.K. case studies based on consumer interviews and surveys, which found that consumers had often seen one or more seafood eco-labels. Two well-established eco-labels, dolphin-safe and organic, drove these rates of sustainable seafood awareness. These rates are interpreted in the context of consumer's understanding of sustainable. The Sustainable Seafood Movement's efforts to increase the supply of eco-labelled seafood and elaborate corporate buying policies for sustainable seafood are

influencing consumer's recognition and purchase of certified sustainable seafood products. However, eco-labels are a means to communicate messages about sustainable fisheries to consumers, not an end. Efforts to educate consumers about eco-labels should be a component of ocean literacy efforts, which educate the public about the need for sustainable fisheries.

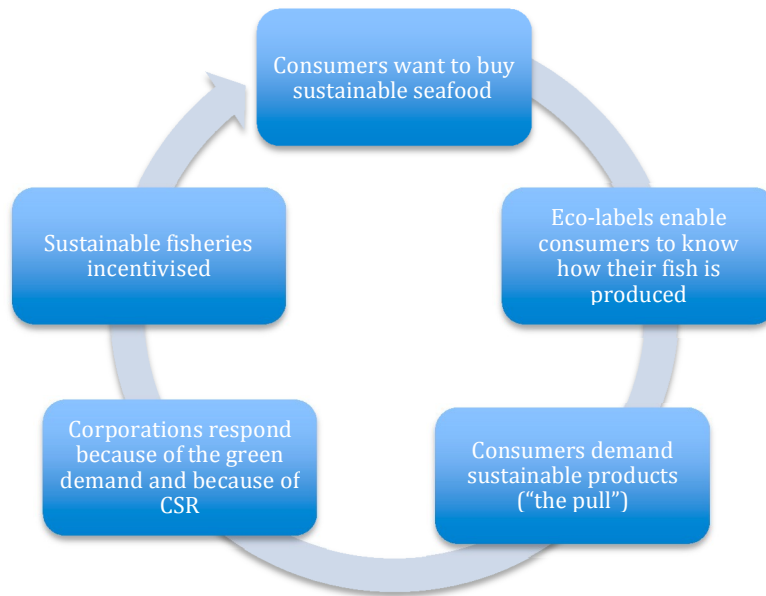
Keywords: consumers; eco-label; sustainable seafood; sustainable seafood movement

1. Introduction

Consumers are supposedly in a position to “vote with their wallet”, by supporting producers whom they know harvest in a more “environmentally friendly” or “sustainable” manner [1,2]. Marine capture fisheries are a public good that has historically suffered from overfishing, overcapacity and adverse impacts to bycatch species and the marine ecosystem [1–4]. Seafood eco-labels give interested consumers confidence that they are purchasing an environmentally friendly product. Eco-labels are a market-based incentive if consumers’ demand is sufficient to create a signal in the market and thus incentivise sustainable fisheries [1,5,6].

This model is based on the following logic, as depicted in Figure 1. First, there are consumers who are aware and care about the environment and want to buy “sustainable” or “environmentally responsible” goods. Second, these consumers have clear information about the goods they are buying. Third, a label or mark, such as an eco-label, provides a clear signal of environmental sustainability that enables consumers to demonstrate demand for these products in the marketplace. Fourth, the more consumers that purchase an eco-labelled product, the more collective demand or “pull” is created for retailers to provide such products. Fifth, the “pull” from retailers to buy certified sustainable product incentivises fishermen to modify their practices to be more sustainable.

Figure 1. Model of consumers' role in eco-labelling.



One way that suppliers have found to demonstrate their product is sustainably produced is by participating in certification programs, such as the Marine Stewardship Council (MSC) or fishery improvement projects [7]. Consumers then have a greater supply of certified sustainable seafood from which to buy; the more they buy the more they incentivise other fisheries to become certified.

Despite this apparent logic, when each step of this teleological model is examined in the light of peer-reviewed literature, weaknesses are exposed. If this logic, or causal model, does not motivate consumers in the real world, what does? We examine this question, through an analysis of the literature and consumer interviews and surveys in the U.S. and U.K. marketplace.

1.1. Assumption One—Consumer Awareness

Before we can assume consumers want to buy sustainable seafood, we need to establish their awareness and the importance they place on addressing seafood sustainability issues such as overfishing, habitat impacts, and bycatch of endangered and protected species. Recent studies in Europe indicate a low awareness of these issues. Pieniak *et al.* surveyed (2013) 3213 European consumers in 2008 about their knowledge of six commonly understood facts about wild-capture fish and aquaculture. Six true/false questions were asked covering topics such as prevalence of farmed v. wild fish in the European market, mercury content in farmed fish v. wild fish, the use of antibiotics in farmed fish and, level of imports in the European products. Overall respondents' knowledge was very low with only two out of six questions correctly answered by 50% or greater of the total participants surveyed [8].

Further, some studies indicate people do not see oceans issues as very important. Potts *et al.* (2011) surveyed 7000 European residents in 2010/2011 about the importance of the ocean to them [9]. When asked how concerned respondents were about each of the following issues—cost of living, health and education, the economy, pollution, affordable energy, poverty, climate change, terrorism, ocean health, species loss and safe and available food, the results showed that ocean health ranked third from the bottom of 11 issues with only 46% of the respondents indicating that it was important or very important. Further, when asked to indicate whether an activity was seen as a threat to the ocean, fisheries were ranked fifth from the bottom (between shipping and new and introduced species), with industry pollution, litter, oil and gas extraction, climate change, ocean acidification, and shipping seen as higher priorities.

However, some segment of consumers are interested in sustainable seafood products. For example, the Monterey Bay Aquarium's Seafood Watch card has been distributed over 40 million times and their smartphone app has been downloaded nearly a million times [10]. While, this does not translate directly to sales, it does demonstrate a general interest and awareness about seafood sustainability issues by an increasing segment of consumers.

1.2. Assumption Two—Eco-Labels Empower

Secondly, eco-labels resolve the information asymmetry between the seller and buyer of a good by providing information to the buyer on how the product was produced [1]. Consumers theoretically can trust that eco-labelled products are produced in a sustainable manner as opposed to un-labelled products. However, some studies indicate if too much information is presented it can confuse and in some cases cause consumers to avoid purchases. For instance, Hallstein *et al.* (2013) evaluated customer's response to a traffic light labelling scheme (green means buy, yellow means buy with caution and red means avoid buying) in a regional supermarket chain in the San Francisco Bay Area of California [11]. Examining sales before, during and after the transition to the traffic light scheme (coupled with a posted low mercury list), they found a statistically significant 15.3% decline in overall seafood sales, largely driven by a statistically significant 41.3% decline in the sale of yellow labelled seafood on the mercury safe list [11]. While the yellow labelled product on the low mercury list was intended to indicate that the consumer should be cautious about purchasing this seafood product but not necessarily avoid it altogether, many consumers appear to have treated the product like a red labelled product and avoided purchase [11]. There was no statistically significant difference in the sales of red or green labelled seafood after the transition. This study found that the labelling of products green, yellow or red only

changed consumer behaviour when the product was labelled yellow. Thus, despite the logic model indicating that labels resolve the information asymmetry, in some cases consumers are not interpreting the labels and associated information the way retailers and their environmental non-governmental (ENGO) partners anticipated.

Uchida *et al.* (2014) also looked at the interaction of information with consumers' preference for eco-labels [12]. He found that when consumers have an existing baseline of information and additional information is provided, as long as that information is deemed as credible or interesting, it improves the consumer's perception of eco-labels. For example, when consumers were told that fish stocks worldwide were decreasing as a result of overfishing and then given United Nations Food and Agriculture Organization (FAO) information about stock exploitation they deemed credible, they placed a higher value on the eco-label. Uchida *et al.*'s work highlights the many factors—country of origin, news of stock status, wild v. farmed—that can influence consumer's perceptions of eco-labels.

The proliferation of eco-labels has also caused concern about heightening consumer confusion [13–16]. Ben Youseff and Abderrazak (2009) used a vertical differentiation model to study the environmental effects and competition of a market with multiple eco-labels. The level of information varies by case. In the first case, information is complete and in the second case the information is incomplete. In the second case, consumers use price as a signal for environmental quality. They found when information is complete a second eco-label in the market improves the environmental quality of the eco-labelled goods, provided the environmental quality the firm advertised is actually in the product. However when the information is incomplete, firms have an incentive to diminish the

environmental quality. As a result, consumers increasingly don't factor the label into their purchasing decision. They conclude that information is very important when there are multiple labels [17].

Brecard *et al.* (2012) also looked at consumer confusion related to multiple eco-labels in the market [18]. Their analysis differs from Ben Youseff in that it includes an unlabelled product and assumes that consumers believe the eco-labelled products indicate the same level of environmental quality, but differ horizontally, that is to say in how close or far the product is to their ideal product. They use a double differentiation framework, which assumes that consumers perceive a label as a sign of quality compared to an unlabelled product but are not able to distinguish the environmental quality associated with each label. They model pricing strategies for three firms that provide a health label, an eco-label and an unlabelled product. They find that the firm providing the eco-labelled product is weakened by the consumer confusion, strict labels hurt the unlabelled product, and the firm selling the health labelled product benefits. Based on their model, they find that over time the unlabelled products will be pushed from the market because they will be perceived as of a lesser quality [18].

In all of these studies, information is key to empowering consumers. However, it is not clear that a one-size-fits-all strategy will empower all consumers sufficiently to allow them to understand and use eco-labels to make more informed purchases. As Eden *et al.* (2008) argue: labels and assurance schemes instead of “unveiling connections” between consumers and the producers may have just inserted themselves as another link in the complex production chain [19]. The consumer as an active agent may accept a product as sustainable without really knowing how his or her purchase contributes to sustainability as a set of on-going environmental, economic, and social processes. As Eden *et al.* state, “This is

problematic because it is precisely this unthinking approach that so many have criticised: the solution of assurance itself can therefore become a problem for assurance [19]” Eco-labels may not resolve the information asymmetries they were designed to mitigate without the proper context and understanding by consumers. Research on consumer demand can shed light on how and under what circumstances consumers respond to eco-labels.

1.3. Assumption Three—Consumer Demand

Several willingness-to-pay studies have been conducted to determine consumer demand for eco-labelled seafood. Initially, much of this research focused on whether consumers would be willing to pay more for an eco-labelled product as the assumption was that producing an environmentally friendly product would cost more. Roheim and colleagues studied consumers’ willingness to pay and found varying results depending on the country and nature of the survey [20–23]. For instance, Johnston and Roheim (2001) looked at whether consumers would switch away from their favourite species if it were not eco-labelled to less favoured but eco-labelled species, given varying price levels [22]. Fifteen hundred households were surveyed by mail with a thirty-one per cent response rate. Participants chose between eco-labelled and non-eco-labelled fresh swordfish, flounder, salmon, and cod at varying prices and where certification indicated the fish were not from an overfished fishery. The study noted whether the species was the respondent’s favourite or overfished. Results indicated consumers were not willing to sacrifice a favourite fish, with respect to taste, in order to purchase a less-favoured fish that had a “no-overfishing” eco-label [22].

The aforementioned studies typically have been conducted in experimental settings. In the marketplace, the evidence of consumer demand is mixed. Roheim *et al.* (2011) looked at aggregated scanner data for metropolitan London to establish whether a price premium existed for Marine Stewardship Council (MSC) labelled Alaskan pollock [23]. They argue that establishing the existence of a price premium assists in the evaluation in the effectiveness of eco-labelling as a market-based incentive, as fishermen need to perceive market benefits, either in the form of a price premium or market access, in order to justify the costs of entering a certification scheme. Roheim *et al.* analysed the volume and dollar sales by stockkeeping unit for over 400 frozen processed seafood products aggregated across London metropolitan supermarkets on a weekly basis for 65 weeks (2007–2008) to determine that 24 pollock products allowed for comparative analysis. Twelve of the twenty-four products were MSC labelled. Analysis showed 3.03 million units of 12 non-MSC labelled products sold *versus* 3.3 million units of the 12 MSC labelled products sold during the same period. A 14.2% price premium on those MSC-labelled processed frozen pollock products exists relative to non-MSC labelled frozen pollock products, after taking into account brand, product form, package size and process form [23]. This study demonstrated that there was a higher demand for MSC product than non-MSC; however, the analysis did not control for special offers on these products. Sogn-Grundvag *et al.* (2012) also looked at MSC *versus* other environmental labels like “line caught” and found that both products had a price premium [24]. The Hallstein study (2013) also used scanner data [from barcoded products] to demonstrate that in some cases demand for labelled product declines if the messaging is confusing [11]. Overall, the results are mixed as to whether there is a universally strong signal from consumers for eco-labelled products across genders, age, income groups and geographic location [25–27].

1.4. Assumption Four—Corporations and Corporate Social Responsibility

The fourth assumption underlying the idealised eco-label feedback loop is that retail corporations respond to consumer demand for eco-labelled seafood as well as from a sense of corporate social responsibility. As discussed in the previous section, consumer demand is not strong enough alone to cause retailers to develop sustainable seafood policies and offer more eco-labelled seafood products.

Gulbrandsen (2006) argues that ENGOs's pressure/encouragement on large corporations to adopt these certification schemes, has facilitated the growth of these certification schemes more than consumer demand [5]. Several ENGO-corporate partnerships, such as World Wildlife Fund and Walmart, have developed over the last decade. These partnerships fostered multiple corporate commitments, which have spurred competitors to adopt similar commitments. For instance, in 2006, Walmart announced it would only stock MSC certified marine capture products within the next three to five years in the U.S. market [28]. While this corporate commitment was broadened in later years to state MSC certified "or equivalent", Walmart nonetheless is working to ensure that seafood in their supply chain is coming from sustainable sources. Walmart's 2011 Sustainability report indicated that 73% of the total pounds of wild fish and farmed seafood at Walmart U.S. and Sam's Club was certified by MSC, the Best Aquaculture Practices or equivalent certification. Walmart's commitment has incentivised its competitors to adopt similar commitments [29].

Corporations are motivated to adopt a seafood sustainability policy as part of their corporate social responsibility goals given that: (1) They need to stay competitive within the grocery industry;

(2) Buying seafood from sustainable sources ensures long-term access to product;

(3) Potential ENGO boycotts make grocery chains wary of risking their reputation and brand [1,30,31]. To this end, supermarkets like the U.K.'s Sainsbury's promote their MSC labelled seafood products and celebrate successes, such as their January 2012 milestone of reaching 100 different MSC labelled products. Consumers have as a result an increasing abundance and diversity of certified seafood product to choose from. Thus, ENGO-corporate partnerships efforts that have developed with the growth of the Sustainable Seafood Movement may be changing consumers' seafood choices and nudging consumers to choose certified seafood product more than the demand originating with consumers [5,32].

1.5. Assumption Five—Sustainable Fisheries Incentivised?

The ultimate goal of this conceptual model of sustainability behaviour is to incentivise sustainable wild capture fisheries. Of all wild capture marine eco-labels, the MSC has likely been reviewed the most to determine its effectiveness in rebuilding marine fish stocks [33–36]. Froese *et al.* (2012) reviewed several fisheries certified by the MSC and Friends of the Sea (FOS). For stocks with available information, and defining overfished as stock size reduced below maximum sustainable yield, they found that 19% of the FOS and 31% of the MSC fisheries were overfished or subject to overfishing [33]. Agnew *et al.* presented a rebuttal to this analysis. Using the more traditional definition of overfishing as biomass 50% below maximum sustainable yield, they found that none of the 45 MSC stocks with sufficient data for analysis were overfished [37]. Thus, debate over the effectiveness of seafood certification processes, such as MSC, in improving the sustainability of fish stocks is far from resolved.

Nevertheless, the growth of eco-labels and seafood sourcing policies has led members of the seafood processing industry to improve the sustainability of their operations and to publicly communicate these improvements. Similarly, the growth of fishing industry led initiatives, such as Gulf SeafoodTrace, or ENGO-industry partnerships, such as GulfWild, suggest that the fishing industry is working to improve the sustainability of their product and publicizing it to consumers, buyers and the general public.

A critical assessment of the literature on the consumer's role in incentivizing sustainable seafood through their purchase decisions questions the validity of this model and suggests that the emphasis on consumers driving the process is inaccurate [5]. Instead, actors in the Sustainable Seafood Movement, like ENGOs, foundations, fishing interests and retailers have been the major contributors to the increase in supply of sustainable seafood and improved fisheries management practices [38]. If this is true, why is seafood certification still characterised as “consumer-driven” [39,40]? And what roles do consumers play in shaping sustainable seafood certification and associated sourcing policies?

These questions are addressed below through a detailed study of consumers' awareness of seafood eco-labels in Washington, DC and Southeast England. In addition, we examine consumers' articulation of what sustainable seafood means, and from the results of these investigations develop recommendations as to what role consumers could play in incentivizing more sustainable fisheries.

2. Methods

The United States and United Kingdom were chosen as case studies due to their common language, comparable consumer profiles, highly developed seafood

markets, and the presence of seafood eco-labels on products in major urban retail outlets in both countries. Washington, DC and Oxford and London, England were selected as study sites. The research was carried out in several iterative steps. Starting in July 2012, 14 semi-structured interviews, lasting 10–15 min, of Southeast England Farmers' Market shoppers were conducted and transcribed. From this a more structured interview was developed and administered to 14 respondents at a Washington, DC Farmers' Market in October 2012, lasting 5–10 min. Respondents were those intercepted at the respective markets who were willing to be interviewed. Farmer's markets were selected as the initial interview sites since those who shop at farmer's markets are more likely to think about where their food comes from. These particular markets were selected based on the willingness of organisers to permit interviews on site. Interviews focused on shopping habits, the expectations consumers had of their retailers and what "sustainable" meant to them.

Surveys of wet counters, frozen and canned seafood displays in major supermarkets were conducted in Washington, DC and London in 2012 and 2013 to identify the most common eco-labels and environmental claims (e.g., sustainably caught, wild-caught, responsibly caught). At least one store was surveyed from every major supermarket chain in the area.

Using the 2012 qualitative surveys as a basis, a largely quantitative survey was developed and administered in April and May 2013. Eighty-six consumers in Washington, DC and 80 consumers in London, England were surveyed about their shopping habits related to seafood products. The recruitment criteria were as follows: the consumer ate seafood, the consumer was alone, and he/she spoke English. Similar to Hanss *et al.* (2011) consumers were surveyed in public places such as in front of grocery stores, at local parks, and near subway stations in each city [41].

Surveys were conducted in the morning, the middle of the day and in the evening during the week and weekends over the course of two weeks in each city. Consumers were shown the questions on an iPad Quicktap app, allowing the respondents to see the question and answers. All statistical analysis was conducted in SPSS 21. All qualitative data was coded using NVivo 10. An inductive approach was employed, wherein key themes were drawn from the open-ended responses. All the open-ended responses were transcribed and the texts were analysed several times to identify major themes.

3. Results and Discussion

This results section is presented in two parts. The first part focuses on the quantitative results from the spring 2013 survey in Washington, DC and London, England. The second part is the qualitative analysis of the 2012 interviews and 2013 surveys, specifically focusing on the question related to what sustainable means to the respondent in the context of food purchases.

3.1. Consumer Characteristics from All Surveys

Table 1 presents a summary of the consumer characteristics from all the interviews conducted in Washington, DC and Southeast England in 2012 and 2013.

Table 1. U.S. and U.K. consumer characteristics.

Variable	Oxford, U.K.	Washington, DC	Washington, DC	London, U.K.
Number of Participants	14	14	86	80
Female Respondents	12 (86%)	8 (57%)	48 (55.8%)	43 (53.8%)
Age Range	26–67 mean = 45.64	22–78 mean = 46.29	18–77 (Three non-responses)	17–73 years (Two missing responses) mean = 36.38
Undergraduate degree or higher	86%	93%	75%	75% (Education levels based on tUK Office of Qualifications and Examination Regulations; Missing one response)
Median Income	22 k–38 k USD (Two non-responses)	85 k USD (Two non-responses, individual income)	61–80 k USD (12 non-responses)	30–60 K USD
Political Affiliation	50% Green Party	72% Democrat; 14% Green Party; 14% Independent	51.2% Democrat; 20.9% Independent	60% -None; 16.3% Labour (Two non-responses)
Religious Affiliation	43% None 21% Christian	57% None 14% Christian	34.9% None 31.4% Christian (Three	37.5% Christian 36.8% None (One non-response)
Religiously Active	36% No Response; 29% Inactive	93% Inactive	52.3% Inactive (Four non-responses)	66.3% Inactive (One non-response)

Resources were not available to conduct a representative sample, so a street intercept survey was conducted in public places. In comparison to census data in both cities, our survey results are skewed towards more educated and wealthy individuals than the average in both cities. That said the findings of this study are informative for those interested in increasing consumer knowledge and understanding of sustainable fisheries through eco-labels.

3.2. Results from Structured Surveys in London and Washington, DC

Consumers in both cities were asked several questions about their seafood purchasing habits, as well as to indicate the importance of various product attributes. The majority of the respondents in both cities was the primary shopper (77.5% in London, 84.9% in Washington, DC) in their household and bought seafood

frequently (55.0% in London and 40.7% in Washington, DC).

Respondents were asked about the importance of several seafood product attributes (freshness, price, environmental impact, location/origin, health benefits, and brand). These questions were also used in the Potts/Brennan (2011) survey of U.K. seafood shoppers [6]. The scale used ranged from Very Important, Important, Moderately Important, Of Little Importance, to Unimportant. Rank analysis indicates that freshness of seafood is the most important attribute and brand is the least in both cities. Environmental impact of product was the third most important attribute in both cities, above price.

3.2.1. Labels Seen and Purchased

In the Washington, DC sample 87.2% of the respondents had seen and 76.7% had purchased one or more seafood products with an eco-label or environmental claim. In the London, England sample 72.5% had seen an eco-label or an environmental claim and 60.0% had purchased one or more of these products. Binominal tests indicate that respondents in the Washington, DC sample are significantly likely to have seen and purchased one or more seafood products with an eco-label or environmental claim ($p < 0.001$). The London sample is only significant for those who have seen eco-labels or environmental claims, but not those that have purchased these products.

In the Washington, DC sample the most recognised label was organic, followed by dolphin-safe, wild-caught, and MSC (see Table 2). The MSC label was seen by 17.4% of the Washington, DC respondents, which is slightly lower than the Marine Stewardship Council's U.S. survey results. Their internet survey of 600 U.S. consumers found that 21% reported having previously seen the MSC label [42]. The recognition ranking differed for the London sample (see Table 2).

Dolphin-safe was the most seen, followed by organic, RSPCA (which is a U.K. only label), and then MSC. In the London sample, as many people had seen no label ($n = 22$ out of 80), as had seen MSC ($n = 22$ out of 80). According to MSC's U.K. 2012 consumer research ($n = 600$), 31% of the respondents had an awareness of the MSC label [42]. Here, the awareness level was 27.5%.

With respect to purchases, 72.5% of the London sample had seen one or more eco-labels, and 60.0% had purchased products with such labels. The ranking of the top three was the same between seen and purchased. As would be expected, those who reported seeing an eco-label or environmental labelling had a significant, positive correlation to those who purchased one (Pearson correlation = 0.754, $p = 0.01$). It should be noted for London, unlike DC, some consumers said they purchased a label they had not indicated seeing. This was due to consumers not realizing until the reading of the question that some brands they regularly purchase, e.g., Young's or Coop, carry such a label.

When the dolphin-safe and organic responses were removed from the samples, the recognition of one or more labels dropped. For Washington, DC, 80.2% of the respondents had seen one or more of the labels (excluding dolphin-safe) and 69.8% had purchased one or more of the labels (excluding dolphin-safe). If dolphin-safe is excluded from the London sample, then 65.0% of the respondents had seen one or more of the labels and 51.3% had purchased one or more of the labels.

If organic is excluded, then 69.8% of Washington, DC respondents report having seen one or more of the labels and 53.5% of the respondents report having purchased one or more of the labels. In London, 66.3% of the respondents report having seen one more of the labels if organic is excluded. And 57.5% of the London respondents report having purchased one or more of the

labels, if organic excluded.

Table 2. The most recognised label was organic, followed by dolphin-safe, wild-caught, and MSC in Washington, DC.

Variable	Washington, DC (n=86)	London, England (n=80)
Dolphin Safe	Seen 44 (51.2%)	Seen 34 (42.5%)
	Purchased 32 (37.2%)	Purchased 28 (35.0%)
Marine Stewardship Council	Seen 15 (17.4%)	Seen 22 (27.5%)
	Purchased 11 (12.8%)	Purchased 17 (21.3%)
Coop Responsibly Sourced (U.K. ONLY)		Seen 12 (15.0%)
		Purchased 11 (13.8%)
Organic	Seen 63 (73.3%)	Seen 29 (36.3%)
	Purchased 56 (65.1%)	Purchased 20 (25.0%)
Friends of the Sea (U.K. ONLY)		Seen 4 (5.0%)
		Purchased 1 (1.3%)
Young's Fish for Life (U.K. ONLY)		Seen 6 (7.5%)
		Purchased 7 (8.8%)
RSPCA (U.K. ONLY)		Seen 24 (30.0%)
		Purchased 18 (22.5%)
Alaska Seafood (U.S. ONLY)	Seen 5 (5.8%)	
	Purchased 4 (4.7%)	
Sustainably Caught (U.S. ONLY)	Seen 12 (14.0%)	
	Purchased 11 (12.8%)	
Responsibly Farmed (U.S. ONLY)	Seen 9 (10.5%)	
	Purchased 6 (7.0%)	
Wild Caught (U.S. ONLY)	Seen 18 (20.9%)	
	Purchased 15 (17.4%)	
None	Seen 11 (12.8%)	Seen 22 (27.5%)
	Purchased 20 (23.3%)	Purchased 32 (40%)
Seen a Label or more	Seen 75 (87.2%)	Seen 58 (72.5%)
	Purchased 66 (76.7%)	Purchased 48 (60.0%)

If the dolphin-safe and organic responses are both excluded, then consumer recognition of one or more labels drops to 40.7% in Washington, DC and 52.5% in London. Those that report purchasing one or more of the remaining labels drops even further to 30.2% in Washington, DC and 43.8% in London, England. Thus, reported purchase levels are much smaller when the dolphin-safe and organic labels, which have been established longer, are removed.

3.2.2. Impact of Information on Willingness to Purchase

With the proliferation of seafood eco-labels, information about those labels becomes increasingly important for consumers to be able to make informed choices

[17]. This survey looked at the effect of providing information about a seafood eco-label on a consumer's willingness to buy it. In each city a subset of respondents was given information about the MSC label and another subset was not. These respondents were then asked whether they would be more willing to buy an MSC labelled product. The MSC data was pooled across both countries in order to have sufficient sample size to analyse. Using a general linear model ($R^2 = 0.127$, $se = 0.3940$), which controlled for income and frequency of seafood purchases, showed that the presence of an MSC label was a significant variable ($p < 0.005$) in determining whether the respondent was willing to buy the seafood product.

This finding suggests that explaining what the MSC label represents can increase respondents' likeliness to buy these labelled products. These results must be caveated, however, as hypothetical biases can exist wherein respondents may give the social acceptable response *versus* what they will actually do. Still, these findings comport with those of Uchida *et al.* (2014) who analysed the influence of information on consumer's perceptions of eco-labels in Japan. They found that when additional information is given to consumers about fisheries status that is deemed credible it increases the preference for eco-labels [12]. However, they did not test for whether it was the content or the source of the information that was influential.

3.2.3. Concern about Sustainability

The survey contained several questions related to respondents' view of the importance of sustainability in their purchases. Using a Likert scale from very important (=5) to unimportant (=1), the average response in both cities regarding the importance of sourcing their food from sustainable sources was between moderately important to important (London = 3.8, $sd = 0.76$; Washington, DC = 3.9, $sd = 1.0$).

Similarly, they indicated that shopping at retailers that care about how their farmers and fishermen produce their products was moderately important (London = 3.9, sd = 0.73; Washington, DC = 4.0, sd = 0.99). And finally, they indicated that their food purchases were moderately important in influencing retailers' buying policies (London = 3.5, sd = 0.86; Washington, DC = 3.6; sd = 1.0).

3.2.4 Knowledge and Trust

The survey concluded with questions on consumer's knowledge of who manages their commercial fisheries, where they get their information on food production, and whom they trust to ensure that the food they eat is sustainable. While the respondents demonstrated a high awareness of one or more eco-labels, 50% of the respondents in both cities did not know which government agency managed their country's commercial fisheries.

Respondents were asked whether they placed their trust in retailers, producers or both to ensure that the food they eat is sustainable. The majority of respondents in Washington, DC indicated that they placed their trust in both the retailer and the producer, whereas in London there was a tie between both the retailer and the product. Finally, when asked who they trust the most to ensure that their food is sustainable, consumer groups and environmental groups were most trusted in Washington, DC (Figure 2) and consumer groups and their own judgment in London (Figure 3). Government and retailers were the least trusted in both cities.

Figure 2. U.S. responses on the most trusted organization.

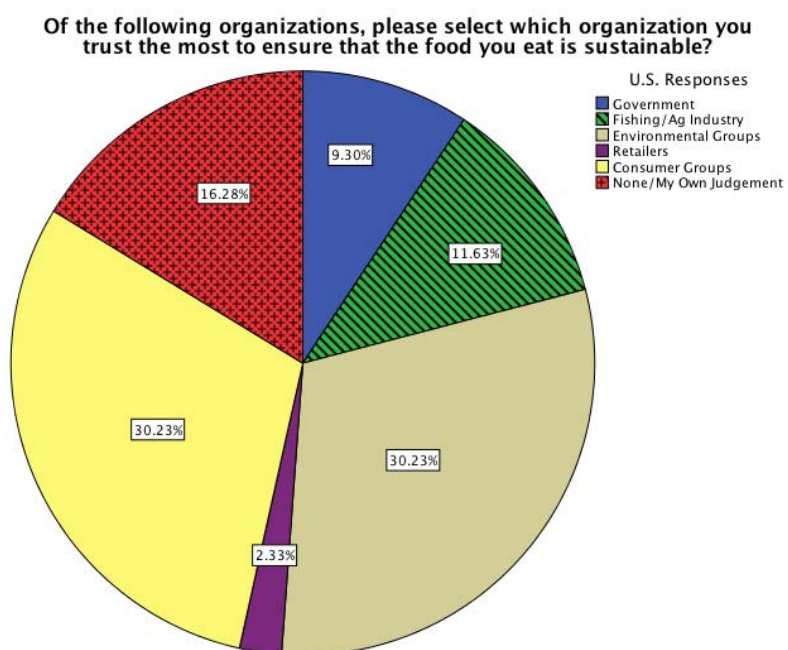
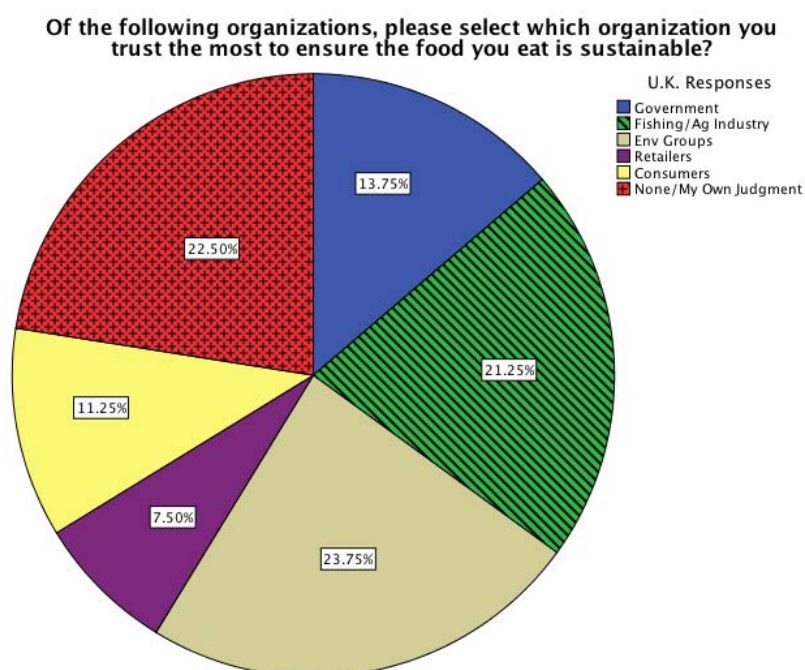


Figure 3. U.K. responses on the most trusted organization.



3.3. Qualitative Analysis

This section focuses on the qualitative analysis of responses to the question “what does the word sustainable mean to you?” which was included in all of the interviews and surveys ($n = 194$). Given that “sustainable” is increasingly used in eco-labelling and other environmental claims on packaging, in seafood buying guides issued by ENGOs, and in retailers’ materials on their sustainable seafood sourcing policies, this question probed what consumers are interpreting sustainable to mean.

Using NVivo 10, an inductive text analysis was conducted and nine themes were identified. These themes were not distinct, but rather overlapping. The themes were ranked from most referenced to least referenced by consumers—environmental responsibility, time, perpetual availability, use, production, avoiding degradation, balance, quality/reliability and I don’t know.

3.3.1. Environmental Responsibility

The vast majority of the respondents expressed some level of responsibility to the environment and/or future generations when describing the word sustainable. This environmental responsibility applied to either themselves, the producer or in some cases both. Those who expressed responsibility from a personal standpoint emphasised how people should treat the environment and what personal actions, such as consumption choices, should be influenced. As one East Oxford Farmers’ Market respondent said: “[sustainable means] doing our best not to damage, basically, and with awareness. Consuming with awareness. Acting towards the environment. It’s a lot to do with respect and awareness”. A London respondent stated, “it means ensuring something is sustainable ... whatever I do makes an impact the next day if I don’t buy a sustainable product I feel like I’m cheating the

environment”. Others echoed this conception by talking about the importance of knowing where your food comes from and that “people must care what they eat”.

Several respondents in both cities highlighted environmental responsibility in terms of future generations. As one respondent remarked: “[sustainable means] the product will be there for my children and my children’s children, ad infinitum”. That is, that one generation should not deplete or degrade valuable resources whether plant, animal, terrestrial or marine.

However, this responsibility to the earth does not negate its use; in fact most of the conceptualizations of sustainability feature a very active sense of use. One respondent described sustainable as “you use the environment so that you get the most effective outcome without destroying everything.” Implicit in these descriptions is the concept of the consumer and producer acting responsibly towards the environment, but how the consumer acts responsibly is typically discussed in the context of use or purchase, whereas the producer’s role is framed in terms of the types of production methods. Captured also within this theme of environmental responsibility is the obligation for production to be safe, as numerous respondents stated that sustainable means “eco-friendly” or “environmentally safe.”

3.3.2. Time

Time was a theme that surfaced repeatedly. Time was integrally linked with the theme of environmental responsibility, as many respondents referenced time in terms of availability of resources for future generations. Others stressed duration and continuance in general, with resources “continuing over time without being depleted. That there is a balanced ecosystem, something that can continue over a

long period,” linking environmental responsibility today to enduring availability, a concept that is discussed in the next section.

Respondents’ time spans ranged from generational to millennial, to perpetual, as in the following response: “Well, sustainable, I guess means, you know that you can keep going for thousands of years. It’s not going to take up resources that you can’t renew again.” These multi-generational timescales suggest that the idea of time in relation to sustainability also relates to the economic concept of discounting. Not only is the theme of time explicit in the reference to supplies lasting for future generations, but also in the concept of renewal in perpetuity. Thus, several respondents went beyond the thousand-year time horizon to suggest that sustainable means “forever”, “*ad infinitum*” or “indefinitely.” In doing so they assume that human action can achieve a systemic equilibrium, and do not account for ecological evolution, shocks and perturbations, and other ecosystem dynamics which may affect the abundance of resources regardless of human consumption or other sustainability actions.

3.3.3. Perpetual Availability

The concepts of environmental responsibility over time ultimately led several respondents to the idea that natural resources will be perpetually available within a sustainable yield. One Londoner said, “it means that there is a plentiful amount of fish in the sea, that there is still enough to take away for our consumption and that there is enough readily available...” Others captured the idea by saying things like “it can be continuously sourced or it can be replenished easily.” Or “It [sustainable] means that it’s something that I can buy now, and if I come back in ten years’ time it will be the same quality and quantity.” Others simply said sustainable means, “that it won’t run out.” Significantly this concept of perpetual availability

mirrors the fisheries management paradigm of Maximum Sustainable Yield (MSY). However, this paradigm has been criticised for its failure to go beyond single species production models, or to incorporate panarchy, or the interplay between environmental change and persistence as a result of anthropogenic or other drivers [43,44]. For consumers there is an assumption that as long as we are environmentally responsible over time, we can continue to have the same things in the same proportions that we have always enjoyed. Given that most wild-capture fisheries are overexploited and that demand for fish is growing with population increases, this lack of accounting for ecological limits places unreasonable expectations on the future availability of wild-capture fish stocks.

3.3.4. Use

As noted above, inherent in most respondents' description of sustainable is the concept of use. Respondents assume that if consumers are environmentally responsible over time with their purchase of seafood products then they can expect to use these products indefinitely in the future. That use, in some cases explicitly described as "consumption," is thus framed as an active, positive contribution to sustainability. As one London respondent said, "I'm not doing significant harm by eating it." Others put it more simply as: "[sustainable is] not overusing." As one Washington, DC respondent summed it up: "[sustainable is] use of a resource that is responsible to the environment and society."

3.3.5 Production

Several respondents made explicit references to production methods or the means of production. These references ranged from general comments about what they considered to be sustainable production methods, often using terrestrial

agricultural analogies, such as leaving fields fallow or, in forestry, cutting down a tree and planting a new one in its place. A few respondents specifically mentioned fisheries related methods, such as using the “right net.”

The production process for some was viewed as a chain of actions or as one person put it, again from a terrestrial perspective: “producing food in a way that preserves the land, workers, supply chains. [It’s] produced and distributed and contributes to the health of people and planet.” That is, the chain of actions for something to be sustainable started with the production of the product.

Many respondents viewed the concept of production from a utilitarian perspective, conceptualising sustainable as “food that is produced in a manner that promotes on-going supply”, or a product that is “produced in a way and at a price that a producer can make a living.” One respondent, whose brother was a cattle farmer, talked specifically about the need to sustain the producer, stating “if you have too much emphasis on environmental issues, you make it difficult to make a living.” She was very sceptical of certain environmental issues, such as climate change, but she drove a great distance each week to get her fish from the local port, since she trusted the produce more than the local supermarket. Further, she made an effort to know her local abattoir as she was very concerned about animal welfare and wanted to ensure her meat came from humanely treated animals. So, while she might have articulated a concept of sustainability in relation to the economic survival of the producer, her actions were likely closer to the idealised concepts of a “sustainable” or “ethical” consumer intimately aware of the production methods and making more sustainable consumption decisions as a result.

3.3.6. Avoiding Depletion or Adverse Environmental Impact

Avoiding depletion or adverse environmental impact was a theme frequently

emphasised. An Oxford Farmers' Market respondent painted a very vivid description of what sustainable meant to her.

“I suppose sustainable means that you don't deplete it to the point where it's kind of nutrition-less or just gone. With sustainable fishing, it means you have to leave some fish to have baby fish left in the sea. Otherwise, you just wipe them out. For, sustainable vegetables you have to leave some nutrients in the soil. In olden times you leave a field fallow, then it would increase its nutrients and then you might rotate. There is nothing of that anymore. If you don't have nutrients, you spray them on. You add it in different ways. It's not sustainable. It's almost, not like depleting stuff, that's what sustainable means to me. I don't know if that's right or not.”

This respondent employs some of the earlier discussed themes of environmental responsibility and agricultural analogy in production methods in order to have sustainable products. She also indicates that we do not currently have adequate methods to ensure sustainability. Others echoed her connection of production methods and depletion, such as this respondent who said sustainable means, “a practice that doesn't deplete the earth or the producers in a bad way; that producers and the Earth aren't unduly impacted by the production method.” In this articulation, it's as if the method of production is responsible for the depletion independent of those who carry out the work.

Several respondents' used language like “endangering it”, making it “go extinct” or exploiting the resource so that “it won't quite expire before it should”, when defining sustainable. Embedded in these concepts of non-depletion is an emphasis on human action. That is to say, that to be sustainable requires sustainable behaviour on the part of both the producer and the consumer to avoid adversely impacting the Earth and its inhabitants.

In addition to the idea of depleting, exploiting, or extirpating a particular natural resource, respondents also talked more generally about “impacting the environment.” For example, one respondent said sustainable is, “to be able to

produce into the future without negative impacts to the environment.” Others described sustainable as having little-to-no impact or no appreciable impact.

3.3.7. A Balanced System

Ultimately, many of respondents described sustainable as being a balance between the production methods, the environment and our use. Sustainable is “about maintaining a status, a balance, maintaining an environment of balance that will allow any system to function fruitfully for an indefinite period of time.” Another said, “Keeping a balance. I fish, so not overfishing, making sure that the item doesn’t become scarce as a result of consumer use.” Two respondents in Washington, DC posited that a sustainable system is a “closed system,” where the “inputs equal the outputs.” The concept of balance carries with it a sense of equilibrium in the environmental system. Most of the consumers also referred to balance in temporal-environmental terms, extracting enough for present needs without compromising the needs of future generations. Only one respondent said sustainable meant “maintainable, affordable in business terms,” directly invoking an economic sustainability perspective. More commonly, respondents viewed sustainability in broad economic terms, for example equating it with “sustainable environmental practices, sustainable markets, diversified markets, [and] a consistent supply and demand.”

3.3.8. Reliable/Quality

Significantly, few respondents mentioned the idea of quality. When raised as a theme, respondents emphasised that it is important that “sustainable” not be seen as a trade-off for a lesser good. Some underscored that quality lies in the context of the product, for example that it is “fresh, more lasting.” Others said sustainable “means to me that good food is producible in the longer term”. And others

employed ideas of health, such as that a product is “dependable in health terms,” “prepared properly to eat,” and “without antibiotics and pesticides,” as metrics of quality. Also captured in the idea of quality is a sense of trust, as evidenced in terms like “trustful food” or “trustworthy.” One respondent, who was from the U.K. but interviewed in Washington, DC, summed up “sustainable” as “produced in a way and at a price that the producer can make a living. Of good quality is implicit in it, as is reasonable animal welfare,” adding the dimension of quality in relation to the sustainable production method.

3.3.9. I Don’t Know

As might be expected, some respondents were not able to easily articulate what “sustainable” meant to them. A transplanted Canadian in London, said “I write articles on this, I should be able to define it,” and then continued to wonder aloud as to how best to define it. A psychoanalyst in DC’s first response was “I am really smart; I should be able to define this,” before graspingly offering her understanding.

Of those who did not respond at all, the vast majority did not speak English as their first language and were not native to the city in which they were interviewed. Another portion of those sampled provided a response to what sustainable is but wondered aloud if it should include other dimensions, such as social or economic impacts, as opposed to just environmental ones, akin to the so-called “triple bottom line” [45]? Finally, others suggested only vague sentiments, as in, “I know what it means but I can’t put it into words, can’t think of it, trusting maybe?” These responses suggest that the concept retains a certain common sense yet ineffable quality, making it hard to define.

4. Discussion

In the idealised behaviour model of seafood eco-labelling, described in the introduction, consumers' purchases play a critical role in incentivizing sustainable fisheries. This model, however, is contingent on consumer awareness and understanding of sustainability, as well as their awareness of environmental and social issues surrounding capture fisheries. This study demonstrates that respondents in Washington, DC and London generally report considering environmental impact when purchasing their seafood and report a high recognition and purchase level of seafood products with eco-labels or environmental claims. Of the Washington, DC respondents 87.2% had seen one or more of the seafood eco-labels or environmental claims in the survey and that 76.7% of those consumers had purchased one or more. In London, 72.5% of the respondents reported seeing one or more of the eco-labels and 60% of those purchased one or more. Of the labels shown, dolphin-safe and organic were the most recognised and purchased in both samples. Given that the dolphin-safe label and the organic label have been in the market place for nearly two decades it is not surprising that these were the two most recognised labels in this survey.

If the dolphin-safe and organic responses are not considered, then consumer recognition of one or more labels drops to 40.7% in Washington, DC and 52.5% in London. Those reporting purchasing one or more of the remaining labels drops even further to 30.2% in Washington, D.C., and 43.8% in London, England; indicating that consumers are less familiar with other labels.

As we lay out in the logic model, the first assumption is based on consumers' understanding of what is a sustainable fishery. The dolphin-safe label has been surrounded by a very public media campaign to show the impacts of setting purse seine fishing nets on a highly identifiable and charismatic marine mammal. Yet

even here consumers can be led to understand sustainable as dolphin safe fishing techniques regardless of the status of tuna stocks or other ecosystem impacts. There are few seafood eco-labels that clearly depict the sustainability issues of a fishery in a way that can be easily understood by the consumer. Given the multitude of issues impacting the sustainability of fisheries, from over capacity to overfishing to illegal fishing to fishers' working conditions to bycatch (as in the dolphin safe case) and habitat impacts, it is difficult to distil these issues into a single iconic representation or sustainability signal.

On balance, then, the original model's assumption that consumers play an influential role in incentivizing sustainable fisheries through their purchases is largely unsupported [16]. However, that doesn't mean that consumers can't play a role in incentivizing more sustainable fisheries, rather there may be more direct means than through their purchases.

When placing this analysis in the context of consumers' articulation of what sustainable means, high level of awareness of eco-labels and environmental claims exists as well as a general concept of sustainable. Only six of the respondents in the London sample could not offer their explanation of it, and in those cases English was not their first language. Likewise in the Washington, DC sample, seven of the respondents were not able to offer an explanation, five of whom did not speak English as their first language. The vast majority of the respondents could offer an explanation if not a concise definition. Consumers articulated "sustainable" as embodying critical dimensions of environmental responsibility, intergenerational time, perpetual availability, prudent use, safe production, avoided depletion, a balanced system, and a reliable/quality product. The typical articulation could be summarised as "sustainable products are there to

be used over the long term without harming the Earth, but that human action is required by producers and consumers to ensure they are sustainable”.

With less than two hundred respondents covering two capital cities, this study offers insight into consumers’ articulation of sustainability, but cannot be considered a fully representative study. Further, surveys like this often have to contend with the social desirability effect of the respondent indicating more socially acceptable or prestigious responses *versus* what they actually believe or do. In this case, it is possible that some respondents indicated having seen an eco-label because they felt that was the socially acceptable answer. However, this was mitigated to some extent by ending the survey with a qualitative question that required the respondent to describe in their own words what sustainable meant to them. Respondents were thus compelled to give their own interpretation of sustainability independent of any pre-selected answers that might give clues to as the socially desirable answer.

Further, these results comport with other studies on consumers’ understanding of what is sustainable. Hanss *et al.* (2011) conducted in Norway 123 face-to-face interviews with participants encountered in public places [41]. This study looked at whether participant’s responses would encompass the five dimensions of sustainability that they proposed—environmental, social, economic, temporal and developmental. They then asked the participants to indicate how frequently they had seen 19 product labels and then rate them on their sustainability. The environmental aspects of sustainability were most frequently discussed, along with the social and developmental. Participants in this study discussed temporal and economic aspects of sustainability the least. They found that consumers’ perception of how indicative the label is of a sustainable product was positively related to their familiarity with

the label. Grunert *et al.* (2011) also studied consumers understanding of sustainability and eco-labels and asked them to explain what sustainable meant in their own words [46]. They found that of the 4408 respondents in the U.K., France, Germany, Spain, Sweden and Poland, those respondents from Germany, France, Spain and the U.K. related sustainable to environmental protection while Poland linked it to maintaining a standard of living. Further, when given a list of 18 items to choose from that relate to sustainability, the respondents more often choose those relating to environmental sustainability than social sustainability. Their study also looked at the use of several sustainability labels, but for non-seafood products. They concluded that general concern for sustainability does not directly lead to changes in behaviour even with readily available information [46]. Our study adds to this growing literature on consumers' perceptions of what is sustainable [41,46] and connects to cultural models of what sustainability is and how to incentivise sustainable fisheries.

Consumers surveyed here clearly relate sustainability to environmental responsibility and recognise that being sustainable takes some action on their part, often through their act of consuming/purchasing goods. This supports the first assumption of the idealised model that a segment of consumers want to buy sustainable products. However, it's not clear that eco-labels or environmental claims by themselves enable consumers to understand how their seafood is produced sustainably. Apart from the dolphin-safe label, the other labels cover multiple fisheries from around the world and grant certification based on different criteria.

Generic seafood sustainability labels may not convey sufficient meaning to compel action, since consumers may fail to connect their purchases to contributing to a more sustainable fishery. As Eden suggests: assurance schemes have become

“knowledge intermediaries” in the effort to reconnect consumers with producers. However, such assurance schemes are in themselves not a “knowledge-fix”, as information is not a “one-way flow” but rather it can be “re-interpreted, validated, received, resisted and outright ignored” [19]. While a segment of consumers may want to buy sustainable seafood products, it’s not clear that eco-labels and environmental claims covering a multitude of sustainability issues by themselves enable consumers to do so easily. Consumer driven demand of eco-labels is not occurring on a large scale; rather eco-labels may rather serve as a means for a business to reduce brand risk [5,16]. As noted in the introduction section, when more labels enter the market, consumers need to have enough information to understand these labels [17], but not too much information to confuse them [11]. This has caused some to advocate for a standardised label [41], possibly set by government [47]. However in this survey, 50% of those sampled in each city did not know who was in charge of managing commercial fisheries in their country. If a standard was to be set by a government entity then significant education and outreach to consumers would need to be undertaken about the issues surrounding the status of fisheries, who regulates the fisheries, and what the standard means for sustainability.

The recent emphasis to promote eco-labels without presenting the larger context of fisheries management domestically and globally has made eco-labels an end instead of a means. Eco-labels should be a means, not an end for consumers to try to support those fisheries moving towards more sustainable approaches to fishing. In our opinion, it is more efficient and impactful to educate consumers about what makes a fishery sustainable and what sustainable seafood consumerism means. In doing so consumers’ understanding of sustainable, which is one based on an active concept of environmental responsibility, may be deepened. Consumer education and

engagement with sustainable fisheries needs to evolve beyond buying the “right” fish to include demanding that the fishing industry and their government improve fisheries management and retailers only provide sustainable seafood options. Ultimately, sustainable seafood should be the only option for consumers to purchase in stores. While eco-labels and environmental claims can possibly aid consumers in their efforts to consume sustainably, if we focus on educating consumers about eco-labels and not the underlying structural problem of overfishing an opportunity is missed to build a constituency that both supports sustainable seafood through their purchases but that also demands it from the fishing industry, retailers and governments. The Sustainable Seafood Movement’s emphasis on market-based approaches has focused on the public’s role as consumers, rather than motivating citizens [32,38]. Both of these roles need to be engaged so that consumers demand sustainable seafood in the marketplace, as well as the electoral space.

5. Conclusions

Consumers surveyed in Washington, DC and London, England ($n = 166$) had a high recognition of issue-specific eco-labels such as, organic and dolphin-safe. These eco-labels have been established longer and focus on well-known ecological issues, whereas other eco-labels address a range of sustainability issues. Labels like MSC or Friends of the Sea, which deal with a multitude of sustainability issues across numerous fisheries, give all products they certify the same consumer-facing label. Thus, consumers do not gain a deeper understanding of the sustainability issues in any particular fishery. As Eden has argued, these labels don’t improve consumer understanding of the resource ecology or production process, but rather act a proxy [19].

Akenji (2014) has added to that criticism, by arguing that eco-labels promote green consumerism, not sustainable consumption, as consumers assume that buying something labelled sustainable is sustainable, when instead, they may need to evaluate their level of consumption [48]. Consumers interviewed and surveyed here articulated sustainability as being a concept that required action by both the consumer and the producer. This case study demonstrates that these consumers do have an understanding of what is sustainable, but that beyond the organic and dolphin-safe labels it is not clear that eco-labels are resonating with consumers and thus activating their role in incentivizing sustainable fisheries. While some certification programs have played a role in improving fisheries sustainability and possibly aided interested consumers [49], a greater emphasis should be placed on activating the public's role not just as consumers, but also as citizens too [32]. While efforts have been made to conduct public outreach campaigns, further investigation is still needed as to how to better engage the public as consumers and as citizens to improve the stewardship of wild capture fisheries [50,51].

Acknowledgments

Thank Kersty Hobson, Connie McDermott and Dave Favis-Mortlock for reading the early drafts of this article and providing critical comments to improve the article. Thank Kashef Majid for reading several versions and providing advice on the quantitative sections.

Author Contributions

The first author designed the interview and survey format with input from the second author. The first author conducted all of the data collection and

analysis. The second author provided detailed input on all aspects of the manuscript preparation.

Conflicts of Interest

The authors declare no conflict of interest.

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The influence of the Sustainable Seafood Movement in the U.S. and U.K. capture fisheries supply chain and fisheries governance

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Over the last decade, a diverse coalition of actors has come together to develop and promote sustainability initiatives ranging from seafood eco-labels, seafood guides, traceability schemes, and sourcing policies in Western seafood supply chains. Based on a literature review, we trace the development of the Sustainable Seafood Movement, which has been working to reform sustainability practices in the seafood supply chain. Focusing on capture fisheries in the U.S. and in the U.K., we explore the roles of key actors and analyze the dynamics within and between actor groups through a cultural model derived from semi-structured interviews. We argue that the Sustainable Seafood Movement is different from previous social movements in that, in addition to actors advocating for government reform, it has motivated supply chain actors to participate in non-state market driven governance regimes. The movement and its actors have leveraged their legitimacy and authority garnered within the supply chain to increase their legitimacy and authority in public governance processes. As the movement continues to evolve, it will likely need to address several emerging issues to maintain its position of legitimacy and authority in both the supply chain and public governance processes.

Keywords: sustainable seafood, certification, non-state market driven governance, social movement and fisheries management

Introduction

The Sustainable Seafood Movement is an outgrowth of the Environmental Movement, which began coalescing in the mid-to-late 1990s, in reaction to the declining status of global fish stocks and the lack of government responses (Konefal, 2013). In 1997, when the first U.S. Status of Stocks report was issued, 86 fish stocks were overfished, 10 were approaching overfished condition, 183 were not overfished and 448 were unknown (NMFS, 1997). The Food and Agriculture Organization's 1997 State of the World Fishery Resources: Marine Fisheries report stated that 60% of the major global fish resources were plateauing at high exploitation levels or declining, and "given that few countries have established effective control of fishing capacity, these resources [were] in urgent need of management action to halt the increase in fishing capacity or to rehabilitate damaged resources (FAO, 1997)."

Non-government actors recognized that capture fisheries were in serious decline and that government regulators either did not have the tools or could not exercise the political will to address the situation (Sutton and Wimpee, 2008). Over the last two decades a diverse coalition of non-government actors have come together to address this governance gap. These actors include environmental non-governmental organizations (ENGOS), philanthropic foundations, certification schemes, verification experts, retailers, food service providers, restaurants, chefs, members of the fishing industry, academics, media and engaged consumers. This coalition of actors and their networks laid the basis for the Sustainable Seafood Movement (movement) which developed key objectives, including the development of non-state market driven governance tools to incentivize sustainable seafood supply chains and improve fisheries governance (Cashore, 2002; Jacquet et al., 2009; Konefal, 2013; Sutton and Wimpee, 2008).

One of the movement's first non-state market driven governance tools, the Marine Stewardship Council (MSC) seafood eco-label, emerged from the partnership between

Unilever, a large multi-national corporation, and World Wildlife Fund, an environmental non-governmental organization (Cummins, 2004). The MSC was developed outside of government-led processes, which heretofore had been the major mechanism for managing U.K. and U.S. capture fisheries. Over time, the movement would develop a number of these tools, such as seafood guides, seafood sourcing policies, and voluntary labeling guidelines, as a means to create a non-state market driven governance regime.

While some of these non-state market driven governance tools, such as the MSC and to a lesser extent seafood buying guides, have been the subject of numerous studies, minimal attention has been paid to the diverse coalition of actors that came together to support the development of these tools (Froese and Proelss, 2012; Gulbrandsen, 2006; Jacquet et al., 2009; Roheim, 2009). Using the United Kingdom and the United States as case studies, this analysis explores the interplay between the various roles of the movement's actors, their objectives and the tools they have collectively created through the development of a cultural model derived from semi-structured interviews.

Social Movement Theory

Tarrow (2011) outlines the four characteristics of a social movement as “collective challenges, based on common purposes and social solidarities, in sustained interaction with elites, opponents and authorities (Tarrow, 2011).” Social movements form when social networks, organization, political opportunities and the emotions surrounding cultural frames are brought together (Tarrow, 2011). Cultural frames are the cognitive understandings or the mental models that people use to understand a situation. In the context of social movement theory, these cultural frames are often alternatives to what authorities or elites have constructed and are critical for constructing common meaning to incentivize common action (Tarrow, 2011). Divergent cultural frames can result in conflict between actors. As Kempton et al (1996) documented in the 1990s, the

differences between actors' cultural models can explain why some actors support environmental action while others do not (Kempton et al., 1996). A social movement must attract participants to subscribe to its cultural frame in order to succeed. In securing adherents, its legitimacy is established (McLaughlin and Khawaja, 2000). Once legitimacy is established it is easier for a social movement to attract resources to sustain and propel it forward. Resource mobilization is critical to enable a movement to promote its objectives to a wider audience and contest the prevailing cultural frame (McLaughlin and Khawaja, 2000). Social movements are different from interest groups in that the former lack steady access to stable resources such that contention can become a key resource within a movement's control (Tarrow, 2011). Thus, a movement's contention of the dominant cultural frame offered by authorities or elites may become a focal point to maintain supporters and attract new recruits (Tarrow, 2011).

The Sustainable Seafood Movement

The Sustainable Seafood Movement is a social movement that began to arise in the mid to late 1990s from a coalition of ENGOs in response to the failure of governments to responsibly manage marine capture fisheries (Sutton and Wimpee, 2008). Sutton et al (2008) argues that despite ENGOs participation in fisheries regulatory processes, the influence of the fishing industry over government regulators and the regulatory process, meant that reform had to come through an alternative mechanism—the seafood supply chain (Sutton and Wimpee, 2008).

The effectiveness and aims of the movement have been critiqued in three articles (Jacquet and Pauly, 2007; Jacquet et al., 2009; Konefal, 2013). Jacquet et al.'s 2007 manuscript describes a spectrum of ENGO activities that range from boycotts of retailers, to traceability and seafood fraud campaigns, to the proliferation of eco-labels and seafood buying guides. These activities are not framed in the context of a social movement. Jacquet et al. is critical of the effectiveness of these market-based efforts, such as seafood eco-

labels, and advocates for ENGOs to engage governments in order to reduce fishing and to inform the public of overfishing in an effort to increase the accountability of policymakers (Jacquet and Pauly, 2007). In the second article, Jacquet et al. (2009) soften their stance toward market-based incentives but suggest that the emphasis on consumers was “premature” (Jacquet et al., 2009). They echo prior findings of the 2005 Bridgespan report, which recommended focusing limited resources on work with a finite number of corporate seafood buyers vs. attempting to engage diffuse networks of consumers. Jacquet et al. suggest several areas that the movement could also address (i.e., food miles, subsidies). This early literature focused mainly on the origins of the movement or critiques of market-based tools. Most of the recent academic and gray literature has focused on individual initiatives of the movement, such as eco-labels, seafood guides, boycotts, campaigns to improve traceability and ENGO-corporate partnerships (Cummins, 2004; Froese and Proelss, 2012; Gutiérrez et al., 2012; Kirby et al., 2013; Ward and Phillips, 2008). Within these publications, the exploration of actors has focused heavily on ENGOs or certification schemes (e.g., MSC), leaving out many other actors in the movement, their roles and relationships.

Konefal (2013) is the only author who has situated initiatives related to sustainable seafood in the context of social movements or broader cultural dynamics. He identifies the Sustainable Seafood Movement as part of the Environmental Movement and then critiques the movement’s emphasis on market-based approaches as perpetuating further neoliberal “notions of individualism, marketization, and the devolution of regulatory authority (Konefal, 2013).” He contends that the large corporate foundations that financed many of the movement’s initiatives perpetuated market-based approaches, devolving authority to markets, while promoting the commodification and consumption of seafood. He asserts that this approach diminishes the movement’s transformative capacity contributing “to the [neoliberal] processes that undergird the exploitation of fisheries (Konefal, 2013).”

Non-state Market Driven Governance

Environmental or civil society movements over the last two decades have also substantially influenced other production sectors, such as forestry, coffee, cocoa, etc. Cashore (2002) identified this phenomenon as “non-state market driven governance” in his analysis of the forestry sector (Cashore, 2002). Non-state market driven governance regimes derive their authority not from the state, but from the marketplace. Cashore outlines four conditions of non-state market driven governance—(1) that the buyers down the supply chain use their demand to regulate the action of the producer in the marketplace, (2) that the state does not directly use its sovereign authority to require adherence to rules in the marketplace, (3) stakeholders/civil society gain authority through the evaluation process that producers must undergo in the marketplace, (4) enforcement of these marketplace processes comes through verification of compliance.

Critical to these non-state market driven governance regimes are the concepts of authority, legitimacy and credibility. Authority in this context relates not to sovereign authority, but the authority that civil society and other stakeholders are able to garner in the marketplace (Cashore, 2002). Cashore and other scholars have found that NGOs have garnered authority in the market-place for a variety of reasons, such as supply chain actors perceiving a market benefit from participating in these processes, moral suasion, and/or sustainability initiatives that have become an accepted norm in certain supply chains (Cashore, 2002; Foley and Hebert, 2013). Through interactions and transactions within the supply chain, actors, such as NGOs, demonstrate their legitimacy. An actor must be seen as legitimate in order to hold authority (Auld, 2009; Tarrow, 2011). Cashore builds on Suchman’s (1995) work and asserts that there are three types of legitimacy present in non-state market driven governance regimes—pragmatic, moral, and cognitive legitimacy. Pragmatic legitimacy is based on self-interest of an organization, moral legitimacy is based on doing the right thing and cognitive legitimacy is based on main-streaming the standardization of a norm or process (Cashore, 2002).

Legitimacy is derived from the exchanges between actors, through which they demonstrate credibility over time. Credibility comes from the actions or actor demonstrating trustworthiness and responsibility (Boström, 2006). However, not all actors with legitimacy and authority in the supply chain are seen as credible (Miller and Bush, 2014; Tarrow, 2011). In several cases, this has not prevented movement actors from exerting pressure on the supply chain to achieve their specific sustainability goals (Miller and Bush, 2014).

In this article we will explore the movement's objectives, actors, their specific domains and relational roles, and how they have gained legitimacy, credibility and hence authority, in the supply chain as well as in public governance processes. We conclude by discussing emerging issues that the movement may need to address in order to maintain its current relevance.

Methods

The United States and the United Kingdom capture fishery supply chains serve as the case studies for this research given that the movement's organizers have targeted these markets first (Packard, 2007). These regions share a common language, have long standing "special relationship" with a documented bi-directional exchange of innovation (Griffith et al., 2006; Tarrow, 2011), people and advocacy campaigns between the two countries (e.g., after U.K. ENGO supermarket rankings proved successful, U.S. ENGOs adopted them). Other countries such as Canada and Australia have similar, equally developed movements, but are not explored here.

Likewise, the aquaculture portion of the supply chain is not explored, as there are a number of sustainability issues that differ between aquaculture and wild capture fisheries. After receiving approval from the University of Oxford's Research Ethics Committee, semi-structured interviews, ranging from 30 to 60 min, were conducted from 2012 to 2013 to explore the roles of the different U.S. and U.K. actors ($n=24$). Interviewees provided written consent that they were willing to participate in the study. Further, where possible, interviews were recorded and transcribed. When this was not possible, detailed notes were made. Participants received copies of

their transcripts for review to ensure accuracy and often provided clarifying information in writing.

Structured questions focused on the roles of actors surrounding seafood eco-labeling, how they relate to each other and the ultimate purpose of seafood eco-labeling. The experts interviewed often worked on several facets of the seafood sustainability issue, hence the scope of interviews widened to discuss topics broader than seafood eco-labeling. Interviewees were selected based on their organization or their personal engagement with seafood sustainability initiatives, such as MSC or the Conservation Alliance for Seafood Solutions. These initial individuals also made recommendations to interview other actors. Interviews were supplemented with background interviews with key informants ($n = 6$) in cases where they did not feel comfortable with a recorded interview. All of the major actor groups, except for foundations and media, were directly interviewed either for a formal or background interview. Additional data on all the sector groups, and in particular the media and foundations, were also gathered through participant observation at major fora for seafood sustainability, such as the North American Seafood Expo (2013–2014) and analysis of peer-reviewed and gray literature.

The interview transcripts were then analysed in NVivo 10 using an inductive approach to coding to develop a cultural model as described in Naomi Quinn's (2013) "Finding Culture in Talk: A Collection of Methods" and Kempton et al.'s (1996) "Environmental Values in American Culture" (Kempton et al., 1996; Quinn, 2013). A cultural model or conceptual model is an informants' understandings of how a process or phenomenon operates, be it climate change, sustainable fisheries management, or some other aspect of nature or culture. Cultural models are shared among individuals but often not completely; there may be variation within and between groups. Elements of a cultural model can emerge from interviews and patterns of discourse evident in transcripts or other documents, such as

common motifs that multiple members of the same group express when speaking about an issue. Through this analysis of interview transcripts, participant observation, which included attending talks and targeted conversations with key actors at major seafood sustainability events, and review of gray and peer-reviewed literature, cultural models emerge regarding the interests and roles of actors in the Sustainable Seafood Movement. This paper uses the cultural models expressed by diverse actors to examine the roles and the objectives that sectorial actors have relative to one another in the movement. In doing so, we are able to explore how the movement's actors have collectively facilitated their legitimacy, authority and credibility in the U.S. and U.K. seafood supply chain and in public governance processes.

Results

Overview of the Movement and Cultural Frame

Our analysis found that there are 10 principal actor groups that compose the Sustainable Seafood Movement—ENGOS, foundations, certification schemes, verification experts, retailers/food service providers, chefs, the fishing industry, academics, consumers, and the media. For the sake of brevity, we treat retailers and food service providers as one actor group and often refer to them collectively as retailers. While they play very similar roles in the movement, we recognize these are very different industries. Within each actor group (e.g., retailers), different actors play different roles. It is important to understand the roles and interests of each actor within the movement as well as within their actor group because it reveals their common and divergent interests that sustain the movement. As Tarrow (2011) notes “interest” is the most common denominator of social movements (Tarrow, 2011). These interests inform the cultural frames that actors in a social movement hold and that can be influenced in order to create and sustain a common cultural frame necessary to bring about social solidarity in the movement. Actors, who share a cultural frame, share a common understanding of the basic

problems facing fisheries. Based on our review of gray-literature, peer-reviewed articles and expert interviews, we have identified points of agreement and disagreement in the actors' cultural frame of fisheries sustainability. One of the principle points of disagreement that was evident in our interviews and in the literature has been the degree to which global fisheries are overexploited (Daan et al., 2011; Murawski et al., 2007; Pauly, 1995; Worm et al., 2006; 2009). ENGOs, foundations and the media tend to subscribe to the viewpoint that global fisheries are significantly overexploited and near collapse in several places. Academic opinions vary from calling for urgent action to address dire impacts, to oceans as models of relative resilience (Hilborn and Hilborn, 2012; Worm et al., 2006). Retailers, food service providers, chefs, certification schemes and verification experts express the view that there are sustainability issues in capture fisheries, but there are also recent success stories. The fishing industry tends to be the most cautious about the urgency of the situation.

While disagreement exists on the severity of exploitation in capture fisheries, there have been several influential processes that have helped to formulate a shared cultural frame in the Sustainable Seafood Movement. Prominent among these are regular stakeholder workshops and stakeholder council meetings that are part of the MSC program development, meetings of the Conservation Alliance for Seafood Solutions, the U.K. Sustainable Seafood Coalition and many others (Conservation Alliance for Seafood Solutions, 2008; Cummins, 2004). As a result, the movement's actors generally agree that fishing practices can be made more sustainable and in many places fish stocks need to be rebuilt. All actors that we interviewed or that we examined their organization's materials, also generally recognize that market-based approaches can improve the sustainability of fisheries by themselves or in concert with government regulation.

Organizers of the Sustainable Seafood Movement

Two roles have been critical to the initial organization of the movement—the

organizers/bridge builders and the funders. ENGOs initially served the role as the organizer of the movement, given their history of organizing coalitions around environmental issues (Dunlap and Mertig, 1991). ENGOs are often long-standing professional organizations that have vast networks and experience in carving out a role in policy debates (McLaughlin and Khawaja, 2000). As the initial organizers of the movement, ENGOs were able to bring together disparate actors across the movement to “build bridges” in order to foster social solidarity through generating new cultural frames to contest established ones (Ward and Phillips, 2008). In the Sustainable Seafood Movement, actors like SeaWeb, an ENGO, have served as conveners of ENGOs and developed venues like the SeaWeb Seafood Summit, to foster dialogue between all the actors in the seafood supply chain. (Seaweb has since sold the SeaWeb Seafood Summit to Diversified Communications, however they continue to manage the content.) In this role, ENGOs have been the initial bridge builders of the movement, bringing together disparate and at times conflicting interests to chart a common vision for ensuring sustainable seafood in the supply chain and thus building a greater network of support for the Sustainable Seafood Movement. Over time other actors, such as retailers and fishing industry representatives, have increasingly shared this role.

Philanthropic foundations have provided the critical strategic direction and financial means for the Sustainable Seafood Movement to develop, grow and sustain its efforts to influence the supply chain and governments. While their work is not as visible as other actors in the movement, foundations have facilitated partnerships that did not previously exist and thus have been instrumental in the growth of the movement. Starting in the late 1990’s, the David and Lucile Packard Foundation and Pew Charitable Trusts, which were dissatisfied with the pace and efficacy of government led fisheries management, identified market-based approaches as priorities for their marine conservation funding (Konefal, 2013). Packard’s “Seafood Choice Initiative” used the Forest Stewardship Council as a model and identified

five market-based approaches to support (1) Certification, (2) Consumer and gatekeeper education, (3) Single- species campaigns, (4) Business-environmental organization partnerships, and (5) Market campaigns (Konefal, 2013).

Konefal (2013) notes that prior to Packard's investment, there were virtually no ENGO market-based campaigns for seafood (Konefal, 2013). Konefal argues that some of the foundations involved in the Sustainable Seafood Movement have ties to large corporations that often have a vested interest in consistent supplies of sustainable seafood. While that may be the case in some instances, the diversity of foundations involved in the movement has expanded over time. Today, the strategic funding decisions of Packard, Pew, Gordon and Betty Moore Foundation, the Prince's International Sustainability Unit and the Walton Family Foundation, amongst other foundations, continue to influence the direction of the Sustainable Seafood Movement.

Foundations have worked most directly with ENGOs and certification schemes (e.g., MSC) and through those relationships have indirectly affected verifiers, retailers, food service providers, chefs and the fishing industry. Academics focusing on fisheries sustainability and related supply chain issues, such as the University of British Columbia's Seas Around Us Project, have also received significant support from some of these foundations (Pew Charitable Trusts). In addition, foundations have supported media or ENGO public education campaigns related to sustainable seafood production and consumption. Thus, foundations have supported the engagement and work of the majority of the actors in the movement.

The Movement's Objectives and Actors' Roles

We analyzed the interview data and gray and peer-reviewed literature to determine the roles of the movement's 10 actor groups in achieving its three main objectives. Many actor groups play multiple roles within the movement. We discuss how these roles contribute to achieving each

objective, in particular improving the sustainability of the seafood supply chain through the development of non-state market driven governance tools (see **Table 1**). To achieve this objective new relationships between actors have developed that did not previously exist, resulting in the movement obtaining legitimacy, authority and credibility in the supply chain. The movement has leveraged this to further its two other objectives—reform in the fishing industry and reform of government-led fisheries management.

Objective—Improve the Sustainability of the Seafood Supply Chain

The majority of our analysis focuses on this objective as the movement had to dedicate substantial resources to it, since a shared cultural frame did not exist from which collective action could take place in the supply chain. To that end, the movement focused its energy on developing several non-state market driven governance tools in the supply chain to achieve the change it sought. Several different actor groups played different roles throughout this process. The following section details these roles and how these actors have come together to improve the sustainability of the seafood supply chain.

Shaming Advocates (ENGOS and the media)

Within the ENGO community, some ENGOS have developed a niche or role as Shaming Advocates. This extends to the Sustainable Seafood Movement, where Greenpeace is seen as and states they are willing to take “hard-scale” action. These actions include occupying supermarkets and encouraging consumers to boycott retailers or products. For example, Greenpeace occupied Loblaw supermarket’s roof in Toronto in November 2008. In July 2009 in San Francisco, the organization launched a spoof website of Trader Joe’s called “Traitor Joe’s” to highlight their weak sustainable seafood sourcing policy (Black, 2010; Ju, 2009). The media assists these shaming efforts by providing ENGO shaming advocates with a

public platform for their boycotts.

Since 2008, Greenpeace U.S. has published a “Carting Away the Oceans” (CATO) report, which ranks U.S. supermarket retail chains on their procurement policies and evaluates relative engagement in fisheries policy reform (Trenor, 2009). The rankings are meant to spur action in retailers who are not sourcing sustainably produced seafood or who do not leverage their relative power as buyers to drive policy change. Critics argue supermarkets only participate to appease Greenpeace, yet several retailers actively advertise their improved CATO ranking relative to other retailers on their websites, legitimizing the report’s findings; and also giving shaming advocates credibility (Safeway, 2014; Target, 2014).

Sustainable Business Partners (ENGOS, foundations, retailers, chefs and fishing industry)

The movement recognized early that an alternative to government regulation could be to leverage the self-interest of corporations to protect the stability of seafood supply through market-based incentives (Ward and Phillips, 2008). The 2006 Walmart and World Wildlife Fund partnership was one of the first large ENGO-Retailer Partnerships. Walmart committed to sourcing 100% of its seafood products from MSC certified fisheries within the next 3–5 years (Walmart, 2006). (The timeline later expanded and included participation in a fishery improvement project, MSC or equivalent.) Thereafter, more ENGO-corporate partnerships developed, often based on ENGOS providing free or cost-offset services to companies, including advice to reform seafood sourcing policies, consumer education and outreach, and more recently, corporate engagement in public policy issues related to fisheries management (Conservation Alliance for Seafood Solutions, 2008; Packard, 2007; Supermarket News, 2008).

In 2008, U.S. ENGOS created the Conservation Alliance for Seafood Solutions (Alliance) to develop a consistent approach to major buyer partnerships (Conservation Alliance for Seafood

Solutions, 2008). Through this Alliance, North American ENGOs developed common steps for working with retail partners to improve their sustainability policies, and more recently, to promote a common set of expectations for fishery improvement projects. The Alliance has facilitated a harmonized framing of the movement's main messages, which allowed ENGOs to have an unusually unified influence over the large buyers (chefs, food service providers and retailers) in the supply chain.

Several interviewees noted that ENGOs whose role focuses on Sustainable Business Partnerships have benefited from the existence of Shaming Advocates, like Greenpeace. Shaming Advocates can cause reputational risk to retailers or food service's brands, while Sustainable Business Partners can offer practical solutions to address this risk. This can enhance the credibility of ENGOs who serve this role as Sustainable Business Partners making chefs, retailers and food service providers more receptive to working with them.

These Sustainable Business Partners early on benefited from Greenpeace's actions to advocate for sustainable seafood sourcing policies. Over time, the scope of the CATO report has expanded to include public policy issues, allowing ENGOs working in the space of Sustainable Seafood Business Partners to engage their retail partners in public policy debates surrounding fisheries management. Thus, ENGOs engaged in the movement have leveraged each other's strengths to develop roles in the seafood supply chain in order to improve the sustainability of the supply chain as well as fisheries governance.

TABLE 1 | Objectives of the movement are captured on the left side; the actor groups are identified across the top and the different roles they play down the right side.

	Actors										Roles
	ENGOs	Foundations	Certification schemes	Verifiers	Retailers/Food service providers	Chefs	Fishing industry	Academics	Media	Consumers	
Initial movement organizers	X				X		X				Movement organizers/Bridge builders Movement funders
		X									
OBJECTIVES											
Improve the sustainability of the seafood supply chain	X								X		Shaming advocates
	X	X			X	X	X				Sustainable business partners Administrators of sustainability Watchdogs/Vocal critics
	X		X	X			X	X			Public educators
	X		X		X	X	X	X	X		End user
										X	
Use the pressure of the seafood supply chain to improve the sustainability of the fishing industry	X	X	X	X	X	X	X				Partners in fisheries improvement Supply chain gatekeeper
			X	X	X	X					
Use the pressure of the seafood supply chain and the fishing industry to improve government regulation	X	X	X	X	X	X	X	X	X	X	Advocates for government reform

Administrators of sustainability (certification schemes and verification experts)

Certification schemes, particularly the MSC, are some of the most visible outgrowths of the Sustainable Seafood Movement. Some of the movement's organizers (NGOs and foundations) recognized early on that market-based certification, like the Forest Stewardship Council, could benefit the seafood sector (Cummins, 2004; Konefal, 2013; Ward and Phillips, 2008). While certification schemes are typically discussed as the various standards (e.g., MSC), third party certification schemes usually comprise three main parties—standard holders, certification bodies and accreditation bodies. Standards holders are typically non-profit organizations dedicated to writing and updating requirements for their standard. Standards holders are neither certification bodies, nor accreditation bodies.

Certification bodies and accreditation bodies serve as the verifiers of the movement's non-state market driven governance tools. Certification bodies evaluate fisheries against performance indicators—the requirements of a standard—and may issue a certificate if the performance of a fishery is compliant with requirements. Accreditation bodies regulate the accreditation of certification bodies and may grant, suspend or withdraw accreditations (the right to issue certificates). Certification schemes differ meaningfully in their structure, both in terms of the governance of standards holders, the procedures to be used by certifiers, and even in whether accreditation bodies are associated with particular schemes (Environmental Law Institute, 2012; James Sullivan Consulting, 2012). Certification schemes have often used international norms, such as the Food and Agriculture Organizations' Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries, as a basis for their standards. As Cashore (2002) notes, by basing non-state norms on existing government rules and policies, non-state actors may be able to achieve cognitive legitimacy (Cashore, 2002).

Prominent standard holders for seafood certification in the U.S. and U.K. market include MSC, Friends of the Sea, and Alaska Responsible Fisheries Management. Standard holders and

certification body auditors play a unique role in the movement's effort to influence the supply chain since the assessment of fisheries by auditors from certification bodies is the main mechanism used to evaluate fisheries' sustainability. If a fishery fails to be certified, it can potentially lose access to a market, or may not receive other indirect benefits. Thus, these non-state market driven governance processes help to enforce the sustainability standards that the movement is advocating for in the supply chain.

It has taken time to mainstream standards in the supply chain, but with the adoption of sustainable seafood purchasing policies committing retailers to source certified seafood product, the legitimacy, authority and credibility of certification programs has increased (Miller and Bush, 2014). Many corporate seafood buyers have embraced certification programs since it allows them to avoid developing the expertise to understand technical issues such as stock status, habitat impacts, and governance of different fisheries. Instead seafood buyers can rely on the expertise of standard holders and certification bodies to regularly assess the performance of fisheries against the standard. Certification schemes also provide a means for retailers to reduce risk (e.g., brand risk, supply shortages, etc.) in their supply chain and to demonstrate to consumers and ENGOs they have fulfilled their commitments to source sustainable seafood. The development of certification schemes has been important in bringing together all of the movement's actors and identifying common interests. This has facilitated the movement's social solidarity, as well as exposed fractions. Certification schemes, particularly MSC, were initially strongly supported by many ENGOs as a means to ensure a best practice from producers. Over time, more movement actors, such as the fishing industry, retailers, foundations and academics, have become critical participants in certification schemes. This has resulted in certification schemes incorporating their interests into the process. As an increasing number of certifications have been granted, at times over the objections of ENGOs, the original ties between ENGOs and standards holders have in some cases loosened

(Christian et al., 2013). In the next section, we discuss the ways the movement is trying to address the differing perspectives on certification schemes.

Watchdogs/Vocal Critics (NGOs, fishing industry, and academics)

NGOs have typically played the role of watchdogs on many different public policy issues (Dunlap and Mertig, 1991). This is also true for the Sustainable Seafood Movement.

Watchdog NGOs have highlighted numerous issues in the supply chain such as truth-in-labeling and disparities between eco-label schemes. In the United Kingdom, ClientEarth's (2011) investigation of environmental claims on seafood products demonstrated the rampant use of claims such as "sustainable seafood," "sustainably caught," "sustainably fished," "responsibly caught," could not be substantiated (ClientEarth, 2011). This investigation led to the development of voluntary guidelines for U.K. retailers, creating a new mechanism for the movement to influence the governance of the supply chain.

NGOs, the fishing industry, and academics also serve as watchdogs/critics of the non-state market driven governance tools that the movement has developed, particularly certification schemes, though in very different ways. These actors often play a very active role in MSC policy reform via the MSC stakeholder council. In addition, NGOs and academics have commented in favor of, and objected to, proposed MSC certifications during stakeholder comment periods (Christian et al., 2013; Gutiérrez et al., 2012). Academics have studied the phenomena of certification schemes, their impacts on specific fisheries and offered critiques of certification schemes (Bush et al., 2012; Eden et al., 2008b; Gulbrandsen, 2006; Oosterveer and Spaargaren, 2011; Potts and Haward, 2006). As more third party certification schemes have entered the marketplace, NGOs such as the World Wildlife Fund and the Environmental Law Institute, have conducted benchmarking exercises or legal reviews to evaluate the rigor of various eco-label schemes (Environmental Law Institute, 2012; James Sullivan Consulting,

2012). The fishing industry has also been critical of certification schemes given they often bear the cost of certification without a commensurate level of benefits experienced by parties such as retailers (MAFAC, 2013; Stoll and Johnson, 2015). The growing number of certification schemes and the costs associated with acquiring multiple certifications that different retailers may require, has exacerbated the fishing industry's concern.

The movement's actors also work together to identify solutions to emerging needs that could undermine the solidarity of the movement. For instance, many of the movement's actors collaborated to establish the Global Seafood Sustainability Initiative (Initiative) (Global Seafood Sustainability Initiative, 2012). This Initiative aims to reduce costs in the supply chain by benchmarking certification schemes so that retailers have a mechanism to determine equivalency of process and performance considerations within certification schemes. In theory, this may allow retailers to allow multiple certification schemes. Thus, potentially reducing the need for the fishing industry to obtain several different certifications to comply with various retailers' buying policies. This Initiative is an attempt to develop consensus around minimum expectations for seafood sustainability standards. The viability of this consensus in the supply chain will depend on whether it can accommodate the concerns of all the movement's actors and the market realities of any outcomes. Through the consensus-building process, the roles of the network of actors are further refined and new organizational networks are built. As Tarrow (2011) argues, social movements do more than just contend, "they build organizations, elaborate ideologies, and socialize and mobilize constituencies (Tarrow, 2011)." This regular collaboration amongst movement actors has helped to build shared cultural frames and objectives.

Public educators (ENGOS, certification schemes, retailers, chef, fishing industry, academics and media)

Many of the movement's actors have engaged in the role of educating the public, though in slightly different ways. Retailers, food service providers, restaurants and chefs, of all the participants in the movement are in a unique position to educate consumers about the importance of sustainable seafood and ocean conservation because consumers often interact with these actors on a daily or weekly basis. Retailers, food service providers and restaurants are capitalizing on this role by explaining their sourcing policies on-line and at the point of sale, along with providing material explaining the importance of sustainable fisheries to consumers (Fields, 2012; Sainsbury's, 2013; Whole Foods, 2012). Several restaurants have built their brand around sustainability and undertaking consumer outreach on marine conservation. With the rise of the celebrity chefs in society, chefs are increasingly using their restaurants, their television shows and their cookbooks to educate the public about the need for sustainable seafood. ENGOs are working with retailers, restaurants and chefs to improve the reach of their sustainability messages as well as to learn from these actors how ENGOs' roles within the movement may help to meet their needs. For instance, the New England Aquarium works with chefs like Barton Seaver who educate the culinary community and engage the public. ENGOs have always engaged the public either directly, through social media and/or traditional media, particularly those affiliated with conservation centers, such as aquariums. Seafood ranking criteria and consumer seafood cards, such as Monterey Bay Aquarium's Seafood Watch or the U.K.'s GoodFish Guide, were one of the Sustainable Seafood Movement's first initiatives (Ward and Phillips, 2008). These assessment systems were designed to motivate consumers to demand sustainable seafood in the supply chain. Some ENGOs initially had a cultural model that assumed mobilizing consumers to ask for sustainable seafood would in turn exert pressure on seafood retailers to pressure fishermen to fish more sustainably (Ward and Phillips, 2008). To that end, several ENGOs around the world developed seafood cards. However, critics maligned ENGOs for not having a unified set of buying

recommendations, causing confusion among consumers and at times impacting the economies of certain fisheries when they were rated red (i.e., avoid this purchase) (Roheim, 2009; Schmitt, 2011). While ENGOs in the Sustainable Seafood Movement made substantial efforts to coordinate their engagement with corporate retailers, several interviewees noted that these efforts did not yield a fully unified rating system. There has however, been convergence between rating systems and more recently, some rating systems have started to give MSC certified fisheries an automatic yellow (i.e., good alternative) (MSC, 2013a).

Around 2005, major philanthropic foundations refined their funding strategies, which in turn shifted ENGOs' focus: moving away from systems used to convince large numbers of consumers to shift their demand to sustainable seafood toward the more achievable option of influencing the relatively limited number of corporate seafood buyers (Packard, 2007). This in turn meant that for certain movement actors, corporate seafood buyers became a target audience, instead of the general public. While, ENGOs continue to provide educational material to consumers through seafood guides and more recently, seafood guide apps, these efforts are largely focused on raising awareness and do not presume that these tools will cause changes in consumer behavior. Some interviewed felt that consumer awareness remains important to ensure that retailers honor their pledges to implement sustainable seafood sourcing policies. In addition to seafood rating cards, the active engagement of the media in the movement has been critical to reaching a large public audience quickly. All of the movement's actors, particularly ENGOs, certification schemes, food retailers and academics, generate stories that the media covers. Influential media outputs, such as major films and documentaries can be sponsored or advised by movement actors, such as foundations or ENGOs, respectively. For instance, Charles Clover's 2006 book *The End of the Line* served as the basis for an

important documentary to raise awareness about the state of global fisheries (Clover, 2006). Greenpeace U.K. and Waitrose served as important advisors to this project. While the media may not be the central actor in the movement, they are the actor with the greatest ability to reach a significant public audience quickly.

End users

While consumers are not key actors in the movement, they are the ultimate recipients of the supply chains' products. Thus, their potential to boycott or support retailers remains a critical point of leverage over the supply chain (Gutierrez and Thornton, 2014). The Sustainable Seafood Movement initially led several targeted campaigns to raise consumer awareness, but with the strategic decision to work directly with corporate buyers to reform production practices more rapidly, consumer targeted programs have not received the same effort as ENGO-corporate relationships (Packard, 2007).

Market research has indicated that “eco-warriors,” those that both have and act on their sustainability ideals, are a relatively small segment of the market (Galloway, 2010). Research indicates that consumers care about buying sustainable seafood, but there remains a behavioral gap between understanding the need for sustainable seafood and buying accordingly: this disconnect remains a challenge for the movement (Oosterveer and Spaargaren, 2011). As more MSC product has become available in the market place, awareness has decreased in the United States from 23 to 21% and increased in the United Kingdom from 18 to 31% (MSC, 2012). It is not clear if these changes relate to variations in the availability of MSC product, consumer engagement in market-based initiatives, or label awareness. Several studies indicate that eco-labels or ratings systems by themselves may not motivate consumers to buy sustainable product (Eden et al., 2008a; Gutierrez and Thornton, 2014; Hallstein and Villas-Boas, 2013; Uchida et al., 2014). Hallstein et al. (2013) showed that when seafood

rated green, yellow and red was available, along with mercury information, sales decreased for yellow with no mercury concern (Hallstein and Villas-Boas, 2013). Unless messaging is very clear, consumers may become confused and/or avoid purchasing altogether.

Objective—Use the Pressure of the Seafood Supply Chain to Improve the Sustainability of the Fishing Industry

Partners in fisheries improvement (ENGOS, foundations, certification schemes, verifiers, retailers, chefs and fishing industry)

During the 2000s, as retailers and their ENGO partners made public commitments to sustainable seafood purchasing policies, several interviewees recounted the gap in processes to improve and reform fisheries quickly in order to maintain a steady, profitable and longstanding supply of seafood. As discussed in the introduction, at that time government fisheries managers had not demonstrated the ability to improve stock status at the pace and scale necessary to meet retailer's needs, even in countries with large management budgets and sufficient agency capacity (Leary et al., 2011). Actors in the movement recognized fisheries would not meet the standards of third party certification programs like MSC unless their management and performance improved. ENGOS, with support from foundations, once again organized partnerships with retailers and innovative members of the fishing industry to close this gap. This work included addressing issues identified by verification experts in confidential MSC pre-assessments, so that fisheries could enter MSC full assessment. Later, and with many retailers unable to meet their procurement policy commitments, ENGOS and retailers/food service providers developed fishery improvement projects to work directly with fishermen to improve fisheries (Conservation Alliance for Seafood Solutions, 2014). As several interviewees noted, these improvements often are incentivized through preferential market access via seafood rankings or benchmarking against

elements of the MSC standard and/or the risk of losing market access without these improvements. Retailers/food service providers may directly work with seafood producers to help them through the certification process and then develop marketing materials around a successful certification (Whole Foods, 2012).

While ENGOs have been critical in organizing partnerships, change on the water is fundamentally controlled by the fishing industry and their participation in the movement is critical. In some instances, even before the emergence of the MSC, seafood companies like Heinz took steps to communicate through labeling to their consumers that their product was dolphin-safe (Baird and Quastel, 2011). As the MSC standard became established, its first big fisheries included some of the leading actors in the Alaskan pollock and salmon fisheries, who participated in part because they were incentivized by the potential of a price premium. Over time, seafood processors and fishermen, working with ENGOs and retail partners, have identified innovations, such as new or modified fishing gear to reduce impacts and new observer technology, in order to improve the sustainability of key fisheries. For instance, the International Seafood Sustainability Foundation (ISSF), founded in 2009, is a collaborative between academics, ENGOs, and tuna processors, seeking to improve the status of tuna and Regional Fisheries Management Organization's management of tuna stocks, in areas where tuna has been poorly managed (ISSF). By improving tuna management practices, tuna fisheries should be able to obtain MSC certification for retail markets. The willingness and leadership of members of the fishing industry to innovate from within and to work collaboratively with other movement actors to achieve aligned goals such as certification, has improved the sustainability of fisheries.

Gatekeeper of the supply chain (certification schemes, verifiers, retailers and chefs)

As mentioned in the earlier section, commitments by large retailers, such as Walmart,

Sainsbury's, Marks and Spencer, and many others have helped to influence the seafood buying practices of the retail sector (Sainsbury's, 2013; Walmart, 2006). Several of those interviewed from ENGOs and retailers noted that as sustainable seafood procurement policies have become the industry norm, retailers have changed suppliers and in some cases obtained MSC chain of custody, to carry certified claims on seafood in their store thus exercising their role as gatekeepers to the supply chain. ENGOs can pressure or shame retailers to use their buying leverage to promote or prevent certain product from entering the marketplace. For instance, as a result of Greenpeace's advocacy, several retailers have stopped carrying shark, orange roughy and Bluefin tuna (Trenor, 2009). Further, the outcomes of audits by verification experts can determine whether product meets a retailers' sourcing policy. As a result of retailers implementing sustainable seafood sourcing policies, there is an increased availability of sustainable product. Using the MSC as a proxy, almost 10% of the total wild capture is MSC certified and more than 25,000 products carry the MSC logo (MSC, 2015).

Food service providers and restaurants have not traditionally labeled their products the way retailers do, so consumers in cafeterias/restaurants generally have to either trust or ignore whether their seafood was sustainably sourced. Recent efforts have increased responsible seafood procurement and labeling initiatives by food service providers and restaurants. For example, McDonald's 14,000 plus U.S. restaurants are now MSC chain of custody certified and use the MSC logo on their pollock Filet-o-Fish packaging (Seafoodsource, 2013). Through initiatives such the U.K.'s Sustainable Fish Cities, which is working to encourage major institutions to only source sustainable seafood, colleges, universities, hospitals, prisons, and schools are developing sustainable seafood sourcing policies so these supply chain actors can also act as gatekeepers for responsibly produced fish. Chefs can also act as gatekeepers between suppliers and consumers. Seaweb's "Give Swordfish a Break" campaign successfully persuaded chefs to refrain from sourcing North Atlantic Swordfish in order to allow the stock

to rebuild (Ward and Phillips, 2008). Supply chain gatekeepers incentivize other actors' participation in non-state market driven governance schemes, like MSC or fishery improvement projects, at the same time exerting consequences—loss of market access—to those who do not.

Objective—Use the Pressure of the Seafood Supply Chain and the Fishing Industry to Improve Government Regulation

Advocates for government reform (all movement actors) Retailer and ENGO collaborations have progressed beyond procurement policies and assuring supplies of sustainable seafood to now include collaborations on public policy issues. For example in the U.K., Marks and Spencer and other retailers made public statements on the need to ban discards during the recent EU Common Fisheries Policy reform (Harvey, 2014). U.S. retailers formally commented on the Bristol Bay mine's impact on salmon populations either individually or through their industry group, the Food Marketing Institute (Ahold USA, 2012; FMI, 2012). Chefs have also engaged in public debates related to sustainable seafood, giving TED talks and lobbying legislators within their jurisdictions for sustainable fisheries. A visible example has been Hugh Fearnley-Whittingstall's "Fish Fight" series in the U.K., which has highlighted fishing gear impacts on benthic habitat and discards. The "Fish Fight" website urges consumers to ask supermarkets about procurement policies, to demonstrate purchasing support for sustainable seafood, and to urge local politicians to take positions on fisheries reforms (Fearnley-Whittingstall, 2013). As a result of the Sustainable Seafood Movements' organized network of partnerships, the constituency groups engaged in public policy debate related to fisheries management has expanded to include retailers, chefs, food service providers, academics, consumers, certification schemes, verification experts, and the media in addition to the traditional constituents—the fishing industry and ENGOs.

Of all the actors, the fishing industry is in a unique position since participating in non-state market driven governance regimes does not alleviate the fishing industry's regulatory obligations, such as quota allocation, observer requirements, etc. Thus, in practice, both public and private governance processes now regulate the fishing industry. Some in the fishing community have embraced this and see the two processes as mutually supportive. For instance, the MSC certification of the U.S. West Coast shrimp trawl fishery allowed the fishery to re-evaluate their management goals and put in place clearer processes to achieve them (MSC, 2009). Similarly, the recent MSC pre-assessment of the inshore fisheries in England highlighted areas where the fishing industry and government need to work to improve stock status and management practices. Industry and government representatives found the pre-assessment analysis a helpful tool to evaluate their efforts to date (MSC, 2013b). Further, the inshore fleet is composed of smaller vessels that have had less political power, but by participating in the MSC pre-assessment they were able to garner greater attention from policymakers. Members of the fishing industry that participate in the movement, have often been able to translate proactive action for sustainability into legitimacy and authority in the supply chain and in turn increasing either personal or organizational influence in traditional governance processes (Ward and Phillips, 2008).

Discussion

Our analysis depicts the actors, their roles and the objectives of the Sustainable Seafood Movement. Several of the movement's non-state market driven governance tools, such as certification schemes, fishery improvement project, voluntary guidelines, seafood sourcing policies or seafood guides, are discussed in the literature separately. By framing these non-state market driven governance tools in the context of the Sustainable Seafood Movement, we see the breadth of the movement's governance regime, its actors, the roles they play and their

common objectives. Through our analysis of interview data, peer-reviewed and gray literature, we found that the movement's actors have come to have a shared cultural frame as to why the movement is needed and what it can do to improve the sustainability of fisheries. However, the movement's actors often have divergent long-term goals. When the interviewees were asked about the ultimate purpose of these market-based incentives and the work of the sustainable seafood movement, six views were commonly given, though not by all actors. ENGOs offered a vision where one day there would only be sustainable seafood in the marketplace forcing out seafood produced using unsustainable practices. Academics and ENGOs explained that ultimately the movement would like to see improved transparency in government processes and the seafood supply chain in order to ensure sustainable fisheries. ENGOs and retailers used the phrase "change on the water" to describe the movement's purpose as propelling more sustainable fisheries. ENGOs, academics and chefs talked about sustainable fisheries leading to healthy ecosystems that included a broad concept of sustainable fisheries, marine protected areas, and thriving biodiversity all ultimately leading to a healthier society. All of the interviewees talked about the need for shared responsibility in some facet, though from very different vantage points. ENGOs saw shared responsibility as consumers, retailers, chefs and food service providers understanding the issue of sustainable fisheries and actively buying sustainable product, the fishing industry taking responsibility for improving the sustainability of fisheries, government regulators managing to ensure sustainable fisheries and ENGOs ensuring accountability and transparency in the process. However, some of the fishing industry representatives had a different perspective, and felt part of the ENGO community sees this vision occurring through the fishing industry bearing the cost of sustainability and were resistant to this approach. And finally, some ENGOs and certification programs, particularly those that work with the fishing industry, described the ultimate goal as "working themselves out of a job" as the fishing industry would take responsibility for the

sustainability of fisheries. This divergence of goals amongst the movement's actors may present challenges to movement over the long-term.

Challenges and Future Directions

Contested Spillover of Authority

As we have discussed throughout the paper, one of the movement's most successful non-state market driven governance tools have been seafood certification schemes. These schemes have become a legitimate means to validate a product's sustainability in the supply chain and more recently have spilled over into U.S. and U.K. public procurement processes. As a result, certain members of the fishing industry have become frustrated with the cost of certification and the loss of brand identity, leading to tensions in the movement. In the summer of 2013, the movement's authority was contested when controversy erupted over the potential loss of market access for some Alaskan salmon producers. Walmart and Sodexo, a vendor to the U.S. National Park Service, independently sent letters to Alaskan salmon producers that were no longer MSC certified reiterating that their respective buying policies specified that they purchase MSC certified product. Several Alaskan salmon producers had left the MSC program and hired a private company, Global Trust, to establish a third party certification program with a consumer-facing label, called the FAO-based Responsible Fisheries Management Standard (Foley and Hebert, 2013). In 2011, Global Trust certified Alaska's salmon fisheries as "responsibly managed" (Foley and Hebert, 2013). A portion of the fishery maintains MSC certification and in November 2013 a new certificate was issued to the new client. Since, the FAO-based Responsible Fisheries Management Standard was not recognized in the aforementioned buying policies, some Alaskan salmon producers were at risk of losing market access.

Given the importance of the Alaskan salmon industry to the state economy (ex-vessel value

of \$575 million in 2012) these salmon producers appealed to government officials, outside of the movement for remedy (McDowell Group, 2013). Alaskan Senators called a Congressional hearing to explore why these sustainability standards had been incorporated into the government procurement processes of the U.S. General Service Administration and the U.S. National Park Service. Alaskan Senators highlighted that the Alaskan state constitution mandates sustainable yields and that Alaskan salmon stocks, in contrast to many of the world's fisheries, have not been found to be either overfished or subject to overfishing (NMFS, 2014). They questioned why the U.S. National Park Service or their supplier (Sodexo) required MSC certification of their suppliers.

Given the political pressure, the U.S. General Service Administration announced new vendor guidelines that rely on U.S. government information (Fishwatch.gov) rather than sourcing standards that movement's actors typically used (Petersen, 2013). At the same hearing, Walmart announced they would evaluate whether the Responsible Fisheries Management Standard was equivalent to MSC and thus met their sourcing criteria; in late 2013 it was deemed equivalent. In 2015, several of the Alaskan salmon producers decided to rejoin the MSC program because of European supply chain sourcing policies.

This example highlights the ongoing challenge the movement faces to its authority and legitimacy in the supply chain, as more fishing industry groups feel pressure to subscribe to requirements of this non-state market driven governance regime. While mechanisms such as public reviews of the MSC criteria or seafood ratings programs (e.g., Seafood Watch), exist for actors inside and outside the movement to express their concerns some actors will continue to feel marginalized and contest the authority of the movement's sustainability tools such as certification and ranking systems by appealing to government authorities.

Shared Responsibility

One way to address the issues of contested authority and legitimacy is for the movement's actors to equitably distribute the responsibility of sustainability across the supply chain. Fishing industry participants that tend to operate in higher volume were amongst the first to participate in the movement. As non-state market driven governance tools have become mainstreamed, fishermen that operate in small fisheries with smaller profit margins are struggling to adopt and participate in these processes. This is particularly true of third party certification where costs are often borne by the fishing producers vs. the ultimate recipients of certified product: retailers and consumers. Seafood ratings can also close markets for fishermen operating in fisheries determined to be "red" (i.e., avoid this purchase), such as fisheries affected by Whole Foods' adoption of the Monterey Bay Aquarium rating system (Eilperin, 2012). In some cases the seafood rating could be based on lack of government regulation and because these are smaller operators and/or a less consolidated industry, they have limited influence on both the regulatory authorities as well as the corporate seafood buyers. If the goal of the movement, as articulated by several interviewees, is to ensure that markets carry only sustainable product it will become an economic necessity for actors in the supply chain, and particularly at the upper end of the supply chain, to share in the cost of sustainability.

This is particularly true when it comes to consumers. The Sustainable Seafood Movement initially focused on consumers, but quickly found it to be more effective to target corporate seafood buyers (Packard, 2007). While a segment of the consumer market is willing to align purchasing power with social/environmental aims there is not sufficient evidence at present to support that the majority of consumers understand the need and respond by purchasing those products (Devinney and Auger, 2010). While seafood guides and eco-labels aid interested consumers, they also focus on an individual commodity rather than connecting consumers to the larger sustainability issues of ocean health and sustainable fisheries.

Interviewees expressed the importance of motivating consumers to make sustainability an

overriding factor in their seafood purchases and in working with retailers to set sustainable sourcing policies as a default, so that consumers do not have to engage in complex sustainability decision-making. By making “sustainable” a default buying specification, consumers can assume/trust that the work is done for them: at the same time they may not understand or see the importance of having sustainable sources of seafood (Eden et al., 2008a). Hence it remains essential for consumers to understand the issues associated with sustainable fisheries production, which may help consumers to accept possible cost increases. If the responsibility to ensure sustainable fisheries is not equitably shared across the supply chain, the market may not be able to bear the costs, limiting the transformative capacity of the movement.

Emerging Markets

Our analysis focused on U.S. and U.K. markets, which tend to have more industrialized fleets that have consolidated and reduced fishing effort over the last decade, as governments have introduced regulations to address overfishing and ecosystem impacts (Teh and Sumaila, 2011). Fishing effort in developed countries has moved to emerging markets as fish stocks have declined, yet these areas often have less information and capability to sustainably manage these stocks (Worm and Branch, 2012). This allows companies to operate less expensively and with limited or no regulation. Retailers with procurement policies that operate internationally can be instrumental in urging emerging markets to adopt stronger governance either in the supply chain or through government processes. For example, several key actors in the U.S. market established the aforementioned International Seafood Sustainability Foundation because they depend on tuna imports and recognized the weak governance in international tuna fisheries was undermining their sustainability goals and presenting reputational risks. In some markets, the movement’s tools—such as certification—allow for greater transparency and inclusion of a more diverse set of stakeholders than government-led

processes. In addition, the assessments for the certification schemes are at times more robust and credible than those developed by governments. The movement's non-state market driven governance regime could potentially complement or serve in the place of public governance mechanisms in emerging markets. This creates both opportunities and challenges for the movement, depending upon the histories and cultures of the market question.

Growing Scope of Sustainability

The traditional emphasis of the Sustainable Seafood Movement has been on environmental sustainability. Recently, interest in social sustainability has increased. The Environmental Justice Foundation's work in Africa and Asia highlighting human rights abuses in foreign fishing fleets, and advocating for legal and safe working conditions for fishers may prove a reform challenge for both domestic and international fleets (EJF, 2014). In 2015, FairTrade USA released V1.0 of a capture fisheries standard that links social and labor considerations in fisheries with environmental sustainability. Food waste and food miles have also entered into the movement's discussion and some actors are trying to incorporate this into the movement's core work. However, the expertise for these newer issues often lies outside of the movement. The movement will have to determine whether to tackle these issues or identify them within the seafood supply chain for the human rights and climate communities to address.

Concluding Remarks

The Sustainable Seafood Movement is a transnational social movement whose non-state market driven governance tools, such as seafood cards and third party certification programs, are typically analyzed independent of the overall social movement, the role of various actors or its core objectives. We argue that analyses of discrete non-state market driven governance tools

such as eco-certification are incomplete unless they are in the context of the objectives and goals of the social movement within a broader political-ecological context. Over the last decade, the movement's initial organizers, ENGOs, foundations, retailers and the fishing industry, have successfully built a network of actors that share a common, overarching, cultural model—a desire to improve the sustainability of capture fisheries via the supply chain, through the establishment of a non-state market driven governance regime. The movement's network of actors has successfully developed several of these tools in the supply chain and used this to influence reforms in the fishing industry and in government-led fisheries management. The ability of the Sustainable Seafood Movement to maintain and grow its legitimacy, authority and credibility in the supply chain and public governance processes may depend on its ability to deal with emerging challenges, such as contested authority, shared responsibility, emerging markets and the multi-faceted tenets of sustainability.

Acknowledgments

The authors would like to thank Dr. Thomas F. Thornton for his invaluable comments on early drafts. We would also like to thank all of the members of the Sustainable Seafood Movement in the United States and the United Kingdom that agreed to be interviewed for this article, many of whom have provided innovation and leadership to reform their own sectors within the movement. And finally, the first author would like to thank the NOAA Fisheries Advanced Studies program for supporting her research. The second author would like to thank SCS Global Services for allowing participation in academic publications.

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Title: Impediments to Fisheries Sustainability – Coordination between Public and Private Fisheries Governance Systems

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Abstract: The Sustainable Seafood Movement (movement) arose in reaction to state-led fisheries management agencies' inertia and failures to prevent overfishing, overcapacity and impacts on the ecosystem. This movement has successfully developed non-state market driven governance tools to catalyse improvements in fisheries governance. Non-state market driven governance is often discussed in the context of certification programs such as the Marine Stewardship Council (MSC), but this is just one facet of a diversified, multi-pronged governance regime to improve the sustainability of fisheries; others include fisheries improvement projects, sustainable seafood sourcing policies, and traceability schemes. These non-state market driven governance tools seek to reform fisheries management through the supply chain.

While recognition exists in the literature of the continued importance of state-led fisheries management reform, the complementary nature and the need for improved coordination between government-led fisheries management and non-state market driven governance efforts is insufficiently explored. Using the United Kingdom and the United States as case studies, this paper contrasts state-led fisheries governance mechanisms with non-state market driven governance mechanisms to highlight where their efforts are complements, substitutes, rivals, or monopolies. Understanding these roles and the structures of each governance regime is necessary to identify impediments to coordination, and mechanisms to overcome these impediments. Without improved coordination, efforts to ensure the sustainability of fisheries will be limited.

1.1 Introduction

The administration of fisheries governance is increasingly shared through formal and informal arrangements between government and non-government actors (Acheson, 2003; Gibbs, 2008). In the past, co-management arrangements have been one of the main mechanisms to share governance between non-state and state actors (McCay and Jentoft, 1996). However, over the last two decades supply chain based non-state market governance regimes have emerged. In this context, shared governance takes place not through negotiated arrangements or co-management agreements. Rather this regime has developed outside of government led processes, largely as a result of the efforts of what has come to be known as the Sustainable Seafood Movement (movement).

This social movement is trans-national and composed of ten principal actors including environmental non-governmental organizations (ENGOS), foundations, certification schemes, verification experts, retailers/food service providers, chefs, the fishing industry, academics, consumers, and the media. The movement arose in response to the failure of government-led fisheries management to prevent and stop the decline of capture fisheries. The movement's principal objectives include a.) Improve the sustainability of the seafood supply chain, b.) Use the pressure of the seafood supply chain to improve the sustainability of the fishing industry and c.) Use the pressure of the seafood supply chain and the fishing industry to improve government regulation. To achieve these objectives, the movement has established non-state market driven governance tools in the global seafood supply chain. These non-state market driven governance tools include seafood certification schemes, like the Marine Stewardship Council (MSC), fishery improvement projects, seafood sourcing policies, traceability schemes and voluntary truth-in-labelling guidelines. Through these tools the movement has garnered credibility and authority in the global seafood supply chain. In certain instances the movement's actors rival traditional government

bureaucracies' authority and credibility in regulating the seafood supply chain and consequently have increased their influence fisheries management. However, as Bell argues this interaction between non-state market driven governance and state-centric governance should be analysed from a positive sum perspective rather than a zero sum perspective (Bell and Hindmoor, 2011).

If greater coordination occurred between these governance systems, could fisheries sustainability be more rapidly improved? Using the United States and the United Kingdom as case studies, this article presents an analysis of the areas where state-led fisheries governance and non-state market driven governance tools rival, complement, or substitute each other and where they are non-rival (monopoly). The impediments to coordination and mechanisms to improve coordination are identified. Finally, this analysis highlights the particular areas where greater coordination could occur and thus speed the reform of fisheries management.

1.2 Background

1.2.1 Why is governance needed in fisheries?

By the 1990s, scientists were calling fisheries "a global disaster" in both developed and developing countries (Pauly, 1995). The cod stocks off of Nova Scotia had collapsed, causing social and economic upheaval in Canadian coastal communities. By the turn of the 21st century, developed countries were starting to make small steps towards regulatory reforms, but a significant portion of global fish stocks remain overfished (Worm et al., 2009). In the 2014 Food and Agriculture Organisation's (FAO) State of the World Fisheries and Aquaculture assessed marine fish stocks fished within biologically sustainable levels have declined from 90% to 71.2% from 1974 to 2011 (FAO, 2014). At the same time our consumption of seafood continues to grow, particularly as three billion people are expected

to enter the middle class by 2030 (WEF, 2012).

Marine capture fisheries are a common-pool resource and as such their management is a collective action problem. Garrett Hardin (1968) and Elinor Ostrom (2003) are characteristic of the two main schools of thought on how to address collective action problems of common-pool resources. Hardin saw the “Tragedy of the Commons” as “rational herdsmen” each seeking to “maximize his gains” (Hardin, 1968). In a common property situation under no or weak regulation, the rational actor is incentivised to use the resource to the greatest extent possible to maximize his gains, lest the common resources be depleted by others. In doing so, according to Hardin “[r]uin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a common brings ruin to all (Hardin, 1968).” Hardin saw the “tragedy of the commons as a cesspool [that] must be prevented by different means, by coercive laws or taxing devices that make it cheaper for the polluter to treat his pollutants than to discharge them untreated” (Hardin, 1968). Hardin’s framing contributed to arguments for privatization and strong, centralised government management of common pool resources. In the fisheries realm, this would manifest through states’ claims of Exclusive Economic Zones (EEZs) and moves to establish individual fishing quotas to end the “race for fish (Oosterveer, 2008).”

Ostrom (2003), on the other hand, advocated for recognition that communal institutions and actors can effectively govern common pool resources (Ostrom, 2003). She and many others documented that effective common property regimes have clear boundaries, rules and norms and compliance mechanisms. For example, the territorial system of Maine lobstermen developed organically, without privatisation or government to effectively control demand for lobsters (Acheson, 2003). For Ostrom, such organic governance may

evolve as a multi-scale activity that can range from small family units up to global level arrangements. When these diverse governance systems are arranged polycentrically from small to very large, collective action problems on multiple scales can be tackled. She concludes that “no magic solution” exists to address collective action problems, but rather she identified design principles that sustain small to medium systems over time (Ostrom, 2012).

While, Ostrom and Hardin present different perspectives on how governance of common pool resources can be achieved, neither denies the need for governance in these circumstances. Marine capture fish stocks are the last food source still harvested from the wild and as such are a public good. Governance is needed to ensure the sustainability of capture fisheries for present and future generations from a food security perspective as well as maintaining functioning ecosystems (FAO, 1995).

State-centric management has more closely aligned with Hardin’s theory of common pool resources in trying to establish property rights and govern using a command and control approach. However, strong centralised governance of fisheries can be cumbersome and expensive to regulate. Increasingly, Western fisheries managers have looked towards establishing property rights through individual fishing quotas to address capacity issues and to sustainably manage fisheries (Costello et al., 2008).

Community driven management and co-management have been employed by fisheries managers as well, but not to the same level (McCay and Jentoft, 1996). Ostrom’s work suggests that state-centric governance by itself is not sufficient to address collective action problems and thus argues for the need to go beyond government led systems to governance systems that include non-state actors. Increasingly fishery scientists have endorsed such multi-scale, multi-level governance systems, particularly for small-scale fisheries (Hilborn and Hilborn, 2012).

1.2.2 What is governance?

Over the last several decades, the concept of governing has expanded from actions carried out by government to governance, which is carried out by a combination of state and non-state actors. A number of definitions of governance exist, depending on the disciplinary perspective (Kjaer, 2004). For the purposes of this paper, a public policy approach is taken, and as such Rhodes' (1997) definition is used. Rhodes, who studied this phenomenon in the United Kingdom, articulates governance as the self-organising, interorganisational networks characterised by interdependence, resource-exchange, regulated by rules of the game, and a significant degree of autonomy from the state. (Rhodes, 1997)

The Thatcher/Reagan era shifted the U.K. and U.S. governments towards a more neo-liberal approach that increasingly favours using markets to address societal issues as opposed to government command and control (Kamarck, 2002; Rhodes, 2007).

Rhodes (2007) attributes marketization, that is, using markets to deliver public services, as fostering the proliferation of networks of organisations to carry out these services (Rhodes, 2007). In order to achieve their goals, these networks of organisations have to cooperate. Thus, as marketization took hold in the United Kingdom and the United States, interdependent policy networks composed of non-state and/or state actors emerged. The term "network governance" has been coined to capture this phenomenon (Rhodes, 2007).

Networks are different to bureaucracies as they are characterised by trust and diplomacy as opposed to authority and rules (Rhodes, 2007). These policy networks may be autonomous and self-organising, and thus not accountable to the state (Rhodes, 2007). Organisations participate voluntarily and through their interactions they determine their shared goals and norms. Actors in the network are deemed as credible, that is trustworthy and reliable, based on their social interactions with other actors in the network (Boström, 2006). Actors

garner authority and legitimacy by creating obligations between them and other actors (Auld, 2009), and in order to cooperate, they have to trust each other and eventually become interdependent (Rhodes, 2007).

As networks have become the means to deliver public services governance systems have become fragmented (Kjaer, 2004). This fragmentation has led to the idea that “steering” these networks is needed. There are two perspectives on how steering can be achieved – state steering or self-steering. The latter refers to more of a top down approach of governments steering these networks, where the former refers to self-organising networks either working positively or negatively with efforts to steer (Kjaer, 2004). As noted above, these networks are based on trust and reciprocity. As a result diplomacy is the means to resolve conflict and coordinate amongst participants, instead of rules and commands (Kjaer, 2004).

In the context of fisheries management, Gibbs (2008) has detailed the emergence of network governance in fisheries management as a result of traditional command and control authority failing to prevent overfishing and non-resource user stakeholders such as environmental non-governmental organizations (ENGOS) engaging to stem the decline of stocks (Gibbs, 2008). He emphasizes ENGOS’ role is beyond lobbying and engaging in public consultation, but one of active engagement in fisheries management. Gibbs attributes this phenomenon to globalisation and the rapid flow of information, but this is an insufficient explanation (Gibbs, 2008).

ENGOS recognised that the strength of fishing industry’s influence over regulators was too great to be overcome solely by increasing ENGO involvement in public consultation processes and lobbying regulators (Sutton and Wimpee, 2008). Instead the dynamic needed to be changed by adding new actors to the governance process, such as retailers that controlled market access to the seafood supply chain. By involving actors that control key

access points in the supply chain the power dynamic shifted to give actors in the burgeoning Sustainable Seafood Movement more influence.

1.2.3 What is the Sustainable Seafood Movement?

The Sustainable Seafood Movement started as a coalition of ENGOs in the late 1990s, then expanded to a coalition of diverse actors including -- ENGOs, foundations, certification schemes, verification experts, retailers/food service providers, chefs, the fishing industry, academics, consumers, and the media (Jacquet and Pauly, 2007; Jacquet et al., 2009; Konefal, 2013; Ward and Phillips, 2008). The organisational prowess of foundations and ENGOs coupled with the innovation of retailers and key fishing industry partners has been critical to the growth of the movement.

The movement actors collaborate outside of government-led processes to fill roles government agencies ceded, either due to resource constraints or shifts in priorities, or to create and fulfil roles in the supply chain that governments do not have the mandates for. The movement's focus on market-based fisheries reform has broadened the stakeholder base for fisheries management from ENGOs and fishermen to include the actors in the entire supply chain, some of whom did not previously participate in fisheries consultations. By creating a non-state market driven governance system rooted in the supply chain, the movement has been able to develop market-based tools such as seafood certification schemes, like MSC, to create norms and compliance regimes outside of government processes to improve seafood sustainability. As supply chain actors have acquiesced to use these tools, the movement has obtained legitimacy and authority in the supply chain (Cashore, 2002). These non-state market-driven governance tools can be perceived as complements, substitutes, rivals or monopolies relative to government-led processes.

2.1 Methods

This article builds on the author's earlier investigation of the Sustainable Seafood Movement in the United States and the United Kingdom (see Article II). For that work, 27 actors in the Sustainable Seafood Movement were interviewed. From this interview data, the movement's actors, their roles and the cultural models that underpinned their shared objectives were revealed. This research also identified several non-state market governance tools that were used in addition to or instead of state led fisheries management tools. This article further explores how these systems relate to each other, drawing from those 27 interviews and peer-reviewed and grey literature. This article explores the following questions –

- a) What is the U.S. and U.K. government regime for sustainable seafood?
- b) What is the non-state market driven governance regime for sustainable seafood in the U.S. and U.K. markets?
- c) How does the scale and scope of these governance regimes differ?
- d) How do public and private governance tools complement, substitute, exclude (monopolies) and rival each other?
- e) Why is coordination necessary between public and private governance regimes?
- f) What are the impediments to coordination?

The United States and the United Kingdom serve as case studies for this article, since these supply chains were identified by the proponents of the Sustainable Seafood Movement as the “natural starting place” given their large markets for high-valued seafood in the global market place (Packard, 2012). There is also a regular exchange of the thought leaders on numerous public policy issues, including those related to marine conservation. ENGOs in the two countries often share ideas and approaches such that advocacy campaigns spill over between

the two countries, (e.g., Greenpeace supermarket rating report started in the U.K. and once successful was expanded to the U.S.). Each country's government, one a parliamentary democracy and the other a federal system, lead to differences in policy implementation though they maybe influenced by similar paradigms (e.g., both governments were simultaneously being advised by the architects of libertarian paternalism, Cass Sunstein and Richard Thaler (Pykett et al., 2011)). This provides an opportunity to compare and contrast how the U.S. and U.K. government have coordinated with non-state actors and draw lessons on how public and private fisheries governance could be more effectively coordinated to ensure sustainable fisheries.

3.1 Results

This section is structured around the questions raised in the methods section.

3.1.1 What is the government system for fisheries management and seafood commodities?

The U.S. and U.K. governments have a legislated role to manage fisheries. In the United States, the Magnuson-Stevens Fishery Conservation and Management Act is the principal fisheries legislation. The purpose of this Act is “to take immediate action to conserve and manage the fishery resources found off the coasts of the United States, and the anadromous species and Continental Shelf fishery resources of the United States” through exercising sovereign rights within the EEZ and exclusive fishery management authority beyond the EEZ (MSRA, 2007). In the United Kingdom, the Marine Management Organisation under the authority of the Marine and Coastal Access Act of 2009 manages the inshore fisheries of England and Wales. As a member of the European Union (EU), the U.K. also abides by the EU Common Fisheries Policy, which was reformed in 2013. The Common Fisheries Policy has many similar objectives to the Magnuson-Stevens act including managing fisheries in an “environmentally sustainable”

manner over the long-term that are “consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies (EU, 2013).”

In general, both the U.S. and U.K. prosecute a fishery through quota allocation, environmental compliance and enforcement. These decisions are based on the latest fish stock assessments and other pertinent environmental data. Through a consultative management process, which can include stakeholder councils, these agencies seek public input from fishermen, seafood processors, ENGOs and other interested groups to determine the most appropriate way to allocate the nation’s public goods within their legal mandate.

Fishery agencies tend to be the unit of analysis when discussing sustainable fisheries.

However, once fish are harvested they are transformed from a public good to a commodity. Other government actors are involved in the laws, regulations and norms surrounding seafood. Those government agencies fall into five categories: (1) fisheries production, (2) seafood consumption, (3) international compliance, (4) consumer protection and (5) producer protection. Fisheries production relates to the laws, norms, and regulations pertaining to harvesting of fish and shellfish products from the ocean, including conducting stock assessments, setting the quota, determining the number of permitted vessels, and assessing the environmental impact of production. These actions are generally the responsibility of national fisheries agencies, which can either be independent agencies or sub-agencies within a larger department, such as the Department of Commerce in the United States and the Department for Environment, Food and Rural Affairs (DEFRA) in the United Kingdom. Seafood consumption relates to laws, regulations and norms that establish government funded seafood promotion boards or set forth

government's seafood procurement policies. This includes health recommendations that may encourage consumers to eat more seafood as part of a healthy diet. Notably, these recommendations may be promulgated without considering if the domestic or global seafood stocks can sustainably supply seafood. International compliance, the third category, relates to all international obligations and corresponding domestic laws and regulations related to food safety, trade agreement compliance, multilateral environmental agreements, regional fisheries management organizations and other international mechanisms. For example, a regional fisheries management organisation resolution may mandate national governments to regulate seafood harvesting, processing and catch documentation. Finally, the last two categories relate to protection of consumers and producers. On the consumer side, mechanisms could include laws and regulations that ensure truth-in-labelling, food safety and environmental assurance e.g., Dolphin-Safe label. On the producer side protections could include legal mandates for the imposition of import tariffs, anti-dumping measures, and measures directing the governments to "level the playing field" between domestic fishers and their international competitors. Table one presents an overview of examples of each category in the United States, the United Kingdom, and the European Union.

Table 1. Examples of Laws, Regulations and Norms for Seafood Sustainability

Category	Country	Examples of Law/Regulation/Norm	Lead Agency	Description
Fisheries Production	United States	Magnuson Stevens Fishery Conservation and Management Act (2006)	Department of Commerce, National Marine Fisheries Service	Principle U.S. law to manage, conserve fishery resources found off the coast of the U.S. and anadromous species.
Fisheries Production	European Union	Common Fisheries Policy (2013)	EU Directorate General for Maritime Affairs and Fisheries	EU policy that sets rules for sustainable fisheries, monitors size of EU fishing fleet, provides technical support and agrees that the EC negotiates on behalf of the EU member countries internationally

Fisheries Production	United Kingdom	Marine and Coastal Access Act (2009)	Department of Food and Rural Affairs, Marine Management Organization	Management of inshore fisheries, marine conservation zones, marine planning, marine licensing and enforcement
Seafood Consumption	United States	Dietary Guidelines for Americans 2010	U.S. Department of Agriculture/ U.S. Department of Health and Human Services	Recommends increasing the amount of seafood consumed in place of meat and poultry.
Seafood Consumption	United Kingdom	U.K. Guidance on Government Buying Standards for Food and Catering Services	Department of Food and Rural Affairs	In England, all central government procurement of fish must ensure that all fish "are demonstrably sustainable with all wild-caught fish meeting the FAO Code of Conduct for Responsible Fisheries (includes Marine Stewardship Council certification and Marine Conservation Society 'fish to eat'.)
Seafood Consumption	United States	Guidelines for Federal Concessions and Vending Operations	General Services Administration/Health and Human Services/Centre for Disease Control	Concessions Sustainability guidelines for contracts at federal facilities states that "where seafood options offered, provide those procured from responsibly managed, sustainable and healthy fisheries."
International Compliance	United States	Final Rule – Antarctic Marine Living Resources; Use of Centralised-Vessel Monitoring System and Importation of Toothfish; Re-export and Export of Toothfish; Applications for Krill Fishing; Regulatory Framework for Annual Conservation Measures	Department of Commerce, National Marine Fisheries Service	Implements U.S. obligations as part of its membership in the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). Includes measures on importation and exportation of Toothfish and the catch documentation scheme documents for re-export.
International Compliance	European Union	Communication from the Commission to the Council and the European Parliament Community - participation in Regional Fisheries Organisations (RFOs) /* COM/99/0613 final */	EU Directorate General for Maritime Affairs and Fisheries	Section 3.2.4 [barring objection] measures of Regional Fisheries Organizations must be complied with by member states as soon as they become binding under the rules of that Regional Fisheries Organization.
Consumer Protection	United States	Green Guidelines, FTC Policy Statement on Deception	Federal Trade Commission	Guidelines for marketers on environmental claims. To ensure that consumers are not misled by deceptive practices.
Consumer Protection	United States	Dolphin Protection Consumer Information Act	Department of Commerce	To ensure that consumers are not deceived by false dolphin safe tuna claims.

Consumer Protection/ Producer Protection	European Union	Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing	EU Directorate General for Maritime Affairs and Fisheries	Requires all seafood imported into the EU carry catch documentation that it was legally caught. Creates an IUU vessel list.
Producer Protection	United States	High Seas Driftnet Fisheries Moratorium Protection Act	Department of Commerce	Enforces the High Seas Driftnet Moratorium by denying port privileges and potentially denying entry of fish products from those countries negatively certified.
Producer Protection	United States	Tariff Act of 1930	Department of Commerce/U.S. International Trade Commission	U.S. industry can petition for relief from imports that are being sold in the U.S. at less than fair market value ("dumping") or that are subsidized by other governments.

3.1.2 What is the non-state market driven governance system for seafood?

Cashore (2002) initially identified the emergence of non-state market driven governance regimes in the forestry sector (Cashore, 2002). He found four related conditions for non-state market governance (Cashore, 2002). First, this governance system is rooted in the supply chain and products are "regulated" through the demand by purchasers in the supply chain. Second, the state's authority is not used to require participation or compliance with these supply chain based rules. Third, stakeholders garner authority through evaluation and verification processes. And fourth, enforcement is assured through compliance audits. His analysis principally focused on the Forest Stewardship Council, (FSC) and other authors later expanded this work to include seafood certification schemes, particularly, the Marine Stewardship Council (Auld, 2009; Bell and Hindmoor, 2011; Konefal, 2013). In the decade since Cashore's initial research, additional non-state market governance tools to certification schemes have been developed. In the seafood supply chain, the Sustainable Seafood Movement has been the proponent of the development of several private governance tools. A brief overview of the three main tools – sustainable seafood sourcing policies, certification

schemes and fishery improvement projects – is provided here, but additional tools are discussed in section 3.1.4. Seafood sourcing policies are typically retailers' and food service providers' corporate buying policies based on the retailer's sustainability objectives. ENGOs specialising in area of sustainable business partnerships, like the U.K. Marine Conservation Society or the U.S. Monterey Bay Aquarium, often provide advice on these policies. These policies at times can mirror ENGOs seafood buying guides (also known as seafood cards), which are publicly available to use by all audiences. These seafood sourcing policies can identify seafood certification schemes, such as MSC, that retailers or food service providers require products in their supply chain to have.

These independent certification schemes evaluate the fishery against sustainability criteria and determine whether the fishery meets it. If the fishery does, it is awarded the certification. The MSC is one of the most well-known seafood certification schemes for capture fisheries. Potts et al presents a detailed review of the development and process of the MSC, as do other authors, so this will not be explored in this article (Bush et al., 2012; Cummins, 2004; Potts and Haward, 2006).

Not all fisheries will meet the criteria for certification right away. To help fisheries become eligible for certification programs or because fisheries want to demonstrate efforts to improve their sustainability to seafood buyers, actors in the Sustainable Seafood Movement created Fishery Improvement Projects (WWF, 2013). Supply chain actors, such as fishermen, ENGOs, retailers and processors work together to identify changes needed to improve the sustainability of the fishery.

These tools developed through cooperative efforts of actors in the Sustainable Seafood Movement who had a shared cultural frame that fisheries were not sustainable and that government approaches alone would not address the issue. States do not grant authority to

these actors, rather actors in the supply chain either consent or acquiesce to the demands of other actors either because of moral suasion or mutual objectives (Cashore, 2002). As mentioned in the example on seafood sourcing policies, ENGOs can advise retailers and food service providers on the seafood buying policies. This in turn reduces the likelihood that other ENGOs, who name and shame, can portray these retailers as unsustainable in boycotts or advocacy campaigns. Through these mutually beneficial relationships, ENGOs, obtain greater legitimacy and authority in the supply chain and retailers become invested in these non-state market driven governance regimes.

3.1.3 How does the scale and scope of these governance regimes differ?

The Sustainable Seafood Movement has developed a non-state market driven governance regime to improve fisheries sustainability and in the process carved out a larger role in fisheries management (Jacquet et al., 2009; Konefal, 2013; Ward and Phillips, 2008). As a consequence, fisheries are now managed by both private and public governance systems. Yet, their power bases lie in different spheres, with the Sustainable Seafood Movement's power grounded in the supply chain and state-centric actors' power grounded in legal mandates. The different spheres are a result of their different conceptual models. The Sustainable Seafood Movement's theory of change focused their efforts on improving the sustainability of fisheries through the seafood supply chain that is the commodity side of the equation and worked backwards to fisheries (Packard, 2012). Whereas fisheries agencies are mandated to manage fisheries, a natural resource, and either have a secondary role in the commodity side of supply chain or no responsibility because other government agencies have the legislative mandates.

Table 2 – Comparison of Private and Public Governance Systems

	Private Governance	Public Governance
Actors	Sustainable Seafood Movement (NGOs, Retailers, Food Service Providers, Chefs, Fishing Industry, etc.)	Fisheries Agencies/Agricultural Agencies, Consumer Protection Agencies, Food Safety Agencies and Trade Agencies
Authority	Moral	Legal
Legitimacy	Established in the supply chain	Established in legal mandates and norms
Market Based Tools	• Boycotts/Buycotts • Buying Guides/Sourcing Guidelines • Eco-labels • Fishery Improvement Projects • Traceability Schemes • Industry Norms (e.g., GSSI)	• Import restrictions • Fisheries Management Tools e.g., fisheries closures, individual fishing quotas • Marketing Boards • Procurement Policies • Eco-labels • Food Safety regulations
Scope	• Fishery as defined by those willing to participate in a fishery improvement project or certification • Global	• Fisheries in the EEZ, flagged vessels • Domestically oriented, with global reach
Scale of Participation	• Voluntary to Compulsory in the Supply Chain	• Voluntary to Legally Compulsory
Scale of Governance	• Voluntary to Compulsory in the Supply Chain	• Voluntary to Legally Compulsory
Agility	• High	• Low

As a result of these different models, the scale and scope of each governance regime is different. For the purposes of this paper, scope applies to the area and/or group that are governed. Scale applies to participation and the nature of governance, from voluntary to compulsory in the supply chain to legally compulsory.

The difference in scope is evident in the respective definitions of fishery between non-state market driven governance and state-centric governance systems. For instance, in the MSC standard, a fishery is defined by the “unit of certification,” which the “fishery client” determines (MSC, 2013a). The “fishery client” represents those vessels and/or

processors interested in MSC certification (MSC, 2013a). The scale of participation and compliance with MSC conditions may be a fishery client's voluntary decision or a compulsory requirement of the supply chain.

In state-centric governance, the state's legal framework determines the scope of the fishery. In the United States, for example, the Magnuson Act defines "fishery" as "one or more stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics; and any fishing for such stocks (MSRA, 2007)." The scale of participation in the regulatory process is mandatory, if a vessel wishes to legally fish.

Table 2 summarizes the key components of these governance systems, which includes the actors, where they derive their authority and legitimacy, the types of market based tools they use, the scope of the governance system, scale of participation and governance and how agile each system is. As indicated in table 2, state-centric governance is rooted in domestic and international law whereas non-state market driven governance is rooted in the international supply chain. The state's definition of fishery is centred on the resource, while the non-state market driven governance definition is centred on the actor in the supply chain. While both have voluntary and compulsory elements, the non-state market driven system re-defines the boundaries of governance based on those willing to participate, often making them smaller and more manageable. Those willing to participate in non-state market driven governance systems, such as certification programs, are often the most innovative actors in a fishery. State-centric governance systems, in contrast, cannot choose who participates, but must balance the interest of all stakeholders against legal mandates, and therefore

are compelled to be more inclusive than non-state market driven governance systems.

As a result, more actors participate in a state-centric governance system and

coordination of actors can take longer. Thus, state-centric governance processes

generally are less agile and take longer to implement sustainability improvements.

3.1.4 How do public and private regimes' governance tools complement, substitute, exclude (monopolies) and rival each other?

State and non-state market driven governance tools complement, substitute, and rival

each other, but each regime still has monopoly on certain tools. Table 3 provides a

summary of different tools and their aforementioned categories. A brief discussion

follows of each these categories – complements, substitutes, rivals and monopolies.

Table 3 – Governance Tools

Tool	Non-state market governance	State-centric governance	Role	Examples
Fishery Improvement Projects	X	X	Complements	Gulf of Mexico Snapper/Grouper
Boycotts/Buycotts	X		Monopolistic	Greenpeace boycott of supermarkets (Black, 2010)
Import Restrictions		X	Monopolistic	EU IUU import restrictions
Corporate sustainable sourcing guidelines	X		Monopolistic	Supermarket sourcing guidelines (Mitchell, 2014)
Government procurement policies		X	Monopolistic	GSA Guidelines for Federal Concessions and Vending Operations
Private Traceability Schemes	X		Monopolistic	ThisFish! , TraceRegister
Food Safety Regulations/Auditing		X	Monopolistic	NMFS Seafood Inspection Program
Fisheries Management		X	Monopolistic	U.S. Magnuson Stevens Act, EU Common Fisheries Policy

Voluntary Industry Guidelines	X		Monopolistic	U.K. Sustainable Seafood Coalition (truth in labeling) Global Seafood Sustainability Initiative (seafood certification benchmarking)
Truth-in-labelling regulations		X	Monopolistic	Federal Trade Commission Guidelines, Competition & Markets Authority
Eco-labels	X	X	Rivals	MSC, Department of Commerce Dolphin Safe
Seafood Sustainability Information	X	X	Substitutes	Seafoodwatch.org, Fishwatch.gov

3.1.4.1 Complements

State-centric governance and non-state market driven governance systems may complement each other as a result of formal or informal coordination. Complementarity occurs when governance mechanisms co-exist in the “same policy domain” and contribute to a “common objective” but have not merged into one governance system (Trubek and Trubek, 2007).” As discussed in section 3.1.2, fisheries improvement projects are one area where state-centric and non-state market governance can complement each other. Fisheries improvement projects are partnerships between ENGOs, fishermen, fishery managers, researchers and sometimes retail chains. These partnerships are typically led by non-state actors outside of regulatory processes and seek to improve the sustainability of the fishery (WWF, 2013). A MSC pre-assessment may lead a group of fishermen to develop a fishery improvement project. In other cases fishermen may simply want to improve the sustainability of their fishery and/or obtain market access. Some fisheries may use fishery improvement projects as stepping stones to an MSC certification (Conservation Alliance for Seafood Solutions, 2014).

Fishery improvement projects arose from a need to have sufficient supplies of sustainable

seafood in developed and developing countries as more and more retailers adopted sustainable seafood sourcing policies. Traditional fisheries management has not always been able to quickly incentivise improvements in stock status and reduce ecosystem impacts because regulatory processes are often very lengthy, subject to multiple consultations and bureaucratic processes. In contrast, fishery improvement projects can develop innovative initiatives to speed improvements in a fishery and complement existing government led policies. For instance, the Gulf of Mexico Reef fishery improvement project started in 2010 after the Gulf of Mexico Reef Fish Shareholders Alliance underwent an MSC pre-assessment (SFP, 2014). The pre-assessment indicated that, even with government regulation, issues remained relating to discard monitoring, observer coverage and data gaps in the recreational portion of the fishery. The participating fishermen signed conservation covenants which stipulated no high grading or discards of fish not required to be released, participating in research, using electronic monitoring and keeping electronic logbooks (SFP, 2014). To aid existing state led programs, the participants adopted a pilot electronic monitoring program. This project demonstrated to regulators that electronic monitoring could be used as an effective method of observing and categorising bycatch and discards in longline vessels. As a result of the partnerships created during the fishery improvement project, the Gulf Wild brand was launched which aims to give market recognition to those participating. This work coincided with fisheries managers implementing new regulations in March 2012, which ended overfishing for gag grouper, a reef fish, and established a 10 year rebuilding timeline (SFP, 2014). The most recent stock assessment for red snapper, another reef fish, found that overfishing has ended and the stock is rebounding. These examples suggest that state and non-state market driven governance can act in complementary ways to achieve congruent objectives in the same policy area.

3.1.4.2 Substitutes

At times, state and non-state market driven governance systems co-exist and produce products that actors in the supply chain consider similar enough that they can be substituted for each other. For example, in the United States, seafood sustainability information for consumers and commercial seafood buyers, such as Seafoodwatch.org and Fishwatch.gov, is one area where state and non-state actors are increasingly performing similar functions so that end users may use both products or substitute one for another. These products have not always been seen as substitutes, however, and in the early days of Fishwatch.gov, some saw it as a rival to Seafoodwatch.org.

Substitutes could be viewed as redundant, a costly duplication of efforts, or they could be seen as providing more resiliency to both governance systems. If government funding or foundation funding diminished or was eliminated, the other governance system could still provide the critical sustainability product to the supply chain. Trouble arises when the private and public governance actors do not coordinate and the products are eliminated from both systems simultaneously.

There is a limit to which products from non-state market driven governance systems and public governance systems can be substituted. For instance, while fishery improvement projects facilitate additional improvements in fisheries, government regulation is still needed to support these commitments. Market-based tools often recognise the need of government regulation. For instance, the FAO's Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries identify fisheries management as a minimum substantive requirement (FAO, 2009). Correspondingly, third party eco-labels, such as MSC, identify government management as one of their evaluation criteria for determining whether a fishery is sustainable. Further, studies have indicated that accountable governance must be in place prior to using market based incentives, like eco-

labels (Erwann, 2009). And the Conservation Alliance for Seafood Solutions and the World Wildlife Fund guidance on fishery improvement projects both identify governments as critical actors in the development and implementation of the fishery improvement project (Conservation Alliance for Seafood Solutions, 2014; WWF, 2013). Only a handful of products can presently be substituted between non-state market driven governance and state governance, but those that can, such as seafood sustainability information allow for a more resilient system of governance.

3.1.4.3 Monopolies

State-centric governance and non-state market driven governance each have areas where they possess sole authority and consequently have a monopoly on that form of governance. As discussed in section 3.1.1, U.S. and U.K. fisheries agencies have legislated mandates to manage their nation's fisheries. This is intimately tied to exercising sovereignty over their territorial waters and/or their EEZs not just for fisheries management purposes, but also for maritime security. As such state actors have a monopoly on the enforcement of fisheries regulations and stopping incursions from unauthorised vessels.

States are also the responsible party in the vast majority of international fisheries treaties and ocean governance regimes. As parties to agreements concerning international fisheries, marine governance, trade, and food safety, states are also responsible for compliance within the international legal regime governing fisheries and the supply chain.

While states have a clear role in the international legal regime, other governance actors have created niche roles in the international seafood supply chain in areas where governments lack mandates. For example, governments do not have legal mandates or resources for providing customised buying guidelines, traceability and auditing schemes for large commercial retailers. Accordingly, non-state actors have created this niche.

Non-state market actors are typically more agile, as they are not confined by legislation and bureaucrat processes, and have a transnational scope in their work. Since, they are not accountable to elected officials and bureaucratic processes, they can develop and trial new tools relatively quickly to service the international supply chain. If the effort proves expedient in fulfilling the recognised governance gap both the non-state actor and the tool may rapidly engender authority and legitimacy in the supply chain. For instance, in the case of the Global Sustainable Seafood Initiative, which seeks to create a benchmarking tool of seafood certification schemes for retailers to compare different schemes, the initiative began in the summer of 2012 and by the summer of 2014 the consultation for the draft benchmarking standards commenced (Global Seafood Sustainability Initiative, 2012). In the space of two years, a significant portion of U.S. and U.K. ENGOs, retailers, and fishing industry representatives have joined the initiative. The Global Seafood Sustainability Initiative is quickly carving its niche in the supply chain as the authority for seafood certification benchmarking and gaining legitimacy through the participation of large seafood processors, retailers and food service companies, such as High Liner, Royal Ahold and Sodexo.

Table 3 highlights several governance tools are the sole purview of non-state actors and others are solely the responsibility of states. These roles and functions have developed in relation to each other. Several of these state-centric tools have a direct corollary in non-state market driven governance systems. For instance, the U.K. Sustainable Seafood Coalition has developed draft voluntary labelling guidelines for what seafood can be labelled sustainable or responsibly harvested independent of the U.K. government. The U.K. Competition and Market Authority is the competent legal authority. As the interviews revealed, ENGOs, like ClientEarth, have found it more effective to work directly with

retailers through forums such as the Sustainable Seafood Coalition than to compel the state to use their authority to address the issue. Non-state market actors use market-based norms including shaming to compel other players, such as retailers, to self-regulate (Jacquet et al., 2009). Further, actors in Sustainable Seafood Movement, such as ENGOs or the fishing industry, often point to legal means that could be pursued (ClientEarth, 2011; Warner et al., 2013). State governance continues to serve as an important enforcement and compliance tool that non-state market actors can invoke in order to compel action. The private and public governance systems have monopolies on their respective tools, but their actions can influence each other.

In addition to niche corollaries to state-centric governance, non-state actors have developed norms and rules within the supply chain in areas where the government has no legal authority or has chosen not to address. These monopolies are based on sole authority and non-competition between the two governance systems. Governments do not have the mandates for these roles and so do not have the authority to compete with non-state market driven governance actors. If the situation changes, and competition emerges, these roles may move into a state of rivalry.

Rivals

Rivalry develops when state-centric and non-state market driven governance systems compete for authority, or when it's perceived that the newer governance system performs the same task as the legal regulation, but better (Trubek and Trubek, 2007). Rivalry can also occur when there is a perceived need to choose between governance systems (Trubek and Trubek, 2007). This latter situation tends to occur particularly when certification systems compete for legitimacy and authority. The U.S. dolphin-safe eco-label is a clear example of a government eco-label and ENGO eco-label rivalling each other in the market

place.

The origins of the dolphin issue date back to the 1950's, when U.S. fishermen realised that yellowfin tuna in the Eastern Tropical Pacific school underneath dolphin pods. Fishermen found that setting purse seines on dolphin pods to capture the yellowfin tuna swimming below to be a highly effective fishing technique. This harvest method resulted in high dolphin mortality (approximately 6 million since the fishery began in the 1950s), which caused a significant population decline. In 1988, the American public demanded action after an American biologist from Earth Island Institute, working undercover on a large Panama-flagged purse seiner, filmed dolphins dying in the purse seine nets (Baird and Quastel, 2011; Teisl et al., 2002).

In 1990, the three largest U.S. tuna canners announced a dolphin-safe labelling policy and soon were followed by other canners (Teisl et al., 2002). The U.S. Congress passed the Dolphin Protection Consumer Information Act of 1990 to create a clear standard and corresponding label so that American consumers would know that dolphins were not harmed in the fishing of their tuna and to ensure truth in labeling (Baird and Quastel, 2011; Teisl et al., 2002). However, Earth Island Institute, an ENGO, felt the U.S. government's certification criteria was not sufficiently rigorous and created their own (Baird and Quastel, 2011). Earth Island Institute established agreements with certain tuna processors to ensure that all processing, storage and independent facilities and procurement records were available for independent monitoring for all their tuna product, not just the Eastern Tropical Pacific catch, which was the initial focus of U.S policy. While the U.S. Department of Commerce Dolphin-Safe label still exists, most U.S. retailers, pressured by ENGOs and the public are only willing to carry the Earth Island Institute Dolphin-Safe label (Miller and Bush, 2014). The dolphin-safe example suggests that non-state labels can carry more legitimacy and authority than government labels in establishing high environmental standards.

The cause of the rivalry between state and non-state actors can start on either side.

Rivalries have pros and cons for these governance systems. On the pro side, the rivalry can keep actors innovating in order to keep pace with the other actors. On the con side, rivalries can be expensive in terms of both human and financial resources and, in zero-sum fashion, can siphon resources away from other critical fisheries governance reform issues.

3.1.5 Why is coordination necessary?

While the Sustainable Seafood Movement established a non-state market driven governance regime in reaction to the inertia and inadequacy of government led fisheries management processes, government's responsibility for fisheries management has not diminished nor can the movement successfully manage fisheries completely independent of government action (Packard, 2012; Shelton, 2009). These governance systems are interdependent, even though they have evolved in separate spheres based on different models of change – one based in a legal regime, and the other in the market regime. Private governance regimes rely on the legal mechanisms of the state to enforce contracts and compel actions by state and non-state actors (Cashore, 2002). Likewise, state actors are able to point to innovations in fisheries as a result of non-state market governance tools, such as fishery improvement projects, to compel changes on a broader scale.

As indicated in table 2, non-state actors have a moral authority where as states have legal authority. They also have differing responsibilities to society. Non-state actors are increasingly seen as having a moral responsibility to the societies they work in, as evidenced by the growth of corporate social responsibility (Robinson, 2012).

Whereas, states have legal obligations to the citizens they govern based on social contracts.

While the basis for these authorities and responsibilities are very different, they both

indicate an obligation to the large society in which they live and work.

In addition to this interdependence and responsibility to the larger society, they share the same goal of sustainable fisheries. Even with different models for achieving sustainable fisheries, this is the ultimate goal of each governance system and so coordinating their actions to be more complementary enables both systems to achieve the shared goal more quickly and maintain it.

3.1.6 What are the factors inhibiting coordination?

During the course of the interviews and literature review, several impediments to coordination emerged. First, since the Sustainable Seafood Movement is a smaller network of actors than the respective bureaucracies of the U.S. and U.K., it is easier for the movement to coordinate and develop consolidated positions. As the movement has worked to influence fisheries management through the supply chain, the range of policy initiatives, regulations and laws that are pertinent to “sustainable fisheries” is ever expanding. As such an increasing number of government departments are becoming engaged in sustainable fisheries management and the sustainability issues surrounding seafood supply chains. Coordination between government departments on these issues can be lacking. Further, when coordination does occur the size and nature of government bureaucracies requires longer time frames for coordination than those of the movement.

The movement is also horizontal in nature, making it difficult to pinpoint a leader to represent all 10 actor groups on all issues. Gutierrez and Morgan (2015) demonstrated that actor groups often play specific roles on specific issues (Gutiérrez and Morgan, 2015).

While there may be dominant actors, there is no one single leader. This makes it difficult for large, hierarchical governments to understand, let alone determine how to best engage the movement. This mismatch between a horizontal and hierarchical structure can make it

difficult to identify regular coordination mechanisms.

State led fisheries management in the United States and the United Kingdom has typically involved multi-stakeholder consultative processes specific to a regulatory or legislative action. Regular forums for multi-stakeholder discussion with all the relevant government agencies on broader seafood sustainability issues, from human rights to food miles to traceability, have not previously existed. Alternatively, actors in the supply chain regularly coordinate through sustainability forums and other private sector initiatives, but government representatives are often limited to one or two Departments, and authorised only to speak on specific issues. Or worse yet, there are no government representatives, given budgetary constraints or absence of clear role for these representatives at these meetings.

During the interviews with actors inside and outside of the Sustainable Seafood Movement, it became clear that movement actors and government bureaucrats were not fully aware of each other's processes. For instance, government representatives often were unfamiliar with what a fishery improvement project is. And movement actors did not fully understand relevant laws and regulations, such as how environmental compliance and fisheries management legislation interact. This lack of awareness can make it difficult for non-state and state actors to identify areas to focus coordination efforts.

Government policies can also make it difficult for coordination to occur, this is particularly true in the United States. For instance, the U.S. government can only receive consensus recommendations from external stakeholders if a Federal Advisory Committee is formally established. This means that while public consultations or roundtables can be held no consensus recommendations can be made to the government by the stakeholders present, thus limiting the effectiveness of these coordination mechanisms and at times inhibiting the conversations.

In addition, when it comes to certification schemes, the U.S. National Marine Fisheries Service's policy states that it does not endorse or participate directly or indirectly in the private sector certification of fisheries (NMFS, 2005). The policy goes on to say that the Service is not under an obligation to change "its scientific or management operations to satisfy the conditions of continuation of any private sector certification award (NMFS, 2005)." The Service will provide information to applicants and certification entities, but beyond that there is limited engagement. In the U.K., the Marine Management Organisation also does not directly engage in assisting fishermen through private certification schemes. However, U.K. Seafish, a quasi-government agency under DEFRA, funded by a tax on the first sale of seafood in the U.K., has created an Interactive Guide to help the fishing industry to compare different certification schemes to identify the right one for them (Seafish, 2014).

Further Seafish facilitated Project Inshore, a EU funded project to conduct MSC pre-assessments on all the English inshore fisheries (MSC, 2013b). In addition, the EU provides funds for member state fisheries that are interested in seeking MSC certification. In addition, starting with the 2012 London Olympics, the U.K. government worked with the Sustainable Fish Cities coalition to adopt sustainable seafood sourcing policies. This resulted in all fish at the 2012 London Olympics being MSC certified or rated 1 or 2 on the U.K. Marine Conservation Society ratings (Holland, 2012). Since that time, the House of Commons, Her Majesty's Prisons as well as the Armed Forces have signed the Sustainable Fish Cities pledge to source sustainable seafood. In contrast, when the U.S. National Park Service's food service vendor, Sodexo, sent letters to Alaskan salmon producers that they must be MSC certified to be in their supply chain, a political firestorm erupted (Petersen, 2013a). In the end, accommodations were made to ensure that this product maintained its access to the supply chain without an MSC certification (Petersen, 2013b). As noted in the introduction, while the U.S. and U.K. governments may have

similar policies their approaches to coordination with non-state actors have varied considerably.

4.1 Discussion

The United States and the United Kingdom offer insight to the different roles that state and non-state market driven governance systems can play in fisheries management.

While this analysis is focused on two countries, there are increasing examples of fisheries management occurring through these separate but interdependent governance systems across the globe (WWF, 2013). The nature of these roles from complements to substitutes to monopolies to rivals is not static, but very dynamic given the nature of the global seafood supply chain. These roles often evolve from one actor moving independently to fulfil a niche role in the face of a perceived governance gap. To date, however, these governance systems have not been well coordinated. Instead of operating in a network governance framework, they are instead operating as two separate but interdependent governance systems.

As detailed in the section on monopolies, non-state market driven governance and state-centric governance employ similar tools within their spheres of influence. While coordination occurs between state-centric actors and actors in the Sustainable Seafood Movement through public consultations for fisheries regulations, coordinated action outside these consultations is relatively rare.

4.1.1 How can coordination be improved?

As governance scholars have noted, networks cannot replace the policy-making apparatus of democratically elected governments, but they can supplement it (Kjaer, 2004). Thus, a “network management” approach maybe more appropriate in this instance. Network management requires coordination, but who carries out that coordination and how it is done needs to be further explored. As discussed in section 1.2.2, one perspective is the

“steering view.” As Rhodes articulates, the “steering view” of networks “sees them as a structure to be managed and a tool of greater central coordination (Rhodes, 2007).” This perspective assumes that the government generally will be leading the coordination.

Rhodes cautions that there are two issues with the centralised steering view. First, when networks that are horizontal, such as those in the Sustainable Seafood Movement, become centrally managed, they change from horizontal to vertical networks. The inherent relationship is changed between the actors into one that is very hierarchical. The autonomy, innovation and effectiveness of the local network that bubbled up from the bottom can be lost (Rhodes, 1997). This can result in a power dynamic between the Sustainable Seafood Movement and the government that is the opposite of what the movement enjoys in the supply chain, and as such they may resist. Secondly, by transforming the relationship to a centrally coordinated one, questions arise as to the lines between public and private governance systems and whether they would continue to act as counterbalances to one another.

Instead of trying to steer the network, governments could instead focus on influencing the process or changing the characteristics of the network to achieve a shared outcome but this often depends on the policy objective (Kjaer, 2004).

How can these actors better coordinate? What areas are most appropriate for coordination? What are the consequences of not coordinating? The answers to these questions will likely depend on the political context. The U.K. government has not had the same litigious relationship with its stakeholders that U.S. government agencies often have, making it easier to establish trust. The varying size of the respective governments and political culture of each country will also likely determine what types of coordination are possible. For effective coordination to occur between public and private governance systems, the

following four actions need to occur.

First, governments need to improve internal coordination so that their representatives speak with a coordinated perspective. The Sustainable Seafood Movement's actors coordinate regularly at key venues such as the major seafood trade shows, but state actors rarely coordinate internally on seafood sustainability issues from boat to plate. Rather, an inter-agency coordinating group dedicated to facilitating dialogue amongst government seafood sustainability efforts is needed. Then, when government actors interact with actors in the Sustainable Seafood Movement they can speak with greater awareness and understanding of the entire suite of government seafood sustainability efforts – from fish as public goods to seafood commodities.

Second, to ensure effective internal coordination, there needs to be clear direction for senior leadership (Jantarasami et al., 2010). Without clear expectations from an executive and firm accountability measures, inter-agency working groups can lack purpose, direction, and become another layer of bureaucracy.

Third, appropriate venues for coordination between state and non-state actors need to be identified. While U.K. Seafish has facilitated regular conference calls and engagement with industry and ENGOs, such a forum has not existed for the Marine Management Organisation beyond the traditional public consultation process. Likewise, the recent recommendation #13 of the U.S. Presidential Task Force on Combatting IUU Fishing and Seafood Fraud is the first time that a forum across all relevant U.S. government agencies and supply chain actors has been created (NMFS, 2015). A regular high-level forum, alternatively or cooperatively led between private and public governance actors, could serve as an effective bridging organisation, thus creating an obligation for private-public engagement on a regular basis (Crona and Parker, 2012). This forum would likely need to

take place along side of existing meetings of the Sustainable Seafood Movement to ensure full participation of all actors.

Finally, there needs to be a clear identification of the areas that public and private governance regimes view as ripe for coordination. In this instance, some steering from state actors could be helpful, as legal and budgetary constraints, often dictate the areas they can work on. Identification of these areas then provides private governance actors an opportunity to focus their efforts on specific issues. As indicated in table 3, there are multiple areas where there are monopolies that have a corollary in the other governance system. These areas should be explored to determine if these monopolies could be transitioned to complements, such as how private traceability programs could complement existing food safety regulations. As these areas of collaboration are explored, states should clearly frame the expectations early in the process. As Rhodes (2007), Stoker and other governance scholars indicate, trust and diplomacy is critical for effective steering of networks (Kjaer, 2004; Rhodes, 2007; Stoker, 2006). It can be diminished or lost if non-state actors expectations are not met repeatedly.

5.1 Conclusion

Leaders of non-state market driven governance and state-centric governance have an opportunity to improve the sustainability of global fisheries stocks, if they make deliberate efforts to reassess each other's roles and achievements and coordinate a common vision for a polycentric, network governance system. The rivalries that exist now only serve to slow sustainability efforts. With greater recognition of the importance of coordination, redundancy and resilience in all fisheries governance systems, an opportunity exists to quicken the pace of global fisheries reform. Four steps are needed to facilitate these actions – 1.) Greater internal government coordination on seafood sustainability issues, 2.)

Clear direction from government leaders that coordination is needed and valued 3.)

Identification of appropriate venues to coordinate, and 4.) Identification of priority areas to coordinate on. Without this, human and financial resources will be spent as the systems compete with each other. Only through coordination between these governance systems can sustainability of global fish stocks be achieved.

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Title: Toward a Theory of Sustainable Fisheries – Aligning Market Based Approaches with Democratic Governance in Fisheries Management

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Abstract

Over the last two decades, the Sustainable Seafood Movement has established a non-state market driven governance regime in the supply chain to address overfishing of marine capture fisheries and the resulting food security issues. These efforts are based on a theory of change that 1) improving the supply of sustainable seafood, 2) increasing corporate retailers' and consumers' demand for sustainable seafood, and 3) reforming fisheries governance will lead to sustainable fisheries. While the individual factors of this cultural model for sustainability have been the subject of various studies, how these factors come together to transform fisheries has not been seriously examined. This paper demonstrates through U.S. and U.K. case studies that there is evidence that the demand for sustainable seafood has increased, but this has come not as a result of consumer demand but from collaborations between a broad network of actors including retailers, environmental non-governmental organisations and fishermen who participate in the Sustainable Seafood Movement. There is evidence that the supply of sustainable seafood has increased as a result of this increased demand by retailers and food service providers, coupled with recent government led fisheries regulatory reform. While evidence exists that these factors are critical to achieve sustainable fisheries, this approach is not without limitations -- public engagement and accountability. This article will explore these limitations and identify possible ways to address them. For instance, the public could be better engaged by bridging their roles as consumers in this market based model to their role as

citizens/stewards/taxpayers in democratic governance models. A more active and engaged citizenry can advocate for fisheries sustainability and demand accountability in the market place and the electoral space. This evolution can only occur with the inclusion of new actors dedicated to improving the accountability of both public and private governance systems through engagement of the public.

1.1 Introduction

1.1.1 What led to the emergence of the Sustainable Seafood Movement?

The Sustainable Seafood Movement emerged during an era of neo-liberalism in the U.S. and U.K. governments. Neo-liberalism promoted devolution of regulatory authority, marketization, and individualism (Konefal, 2013). Markets were increasingly seen as the most agile instruments to address societal problems rather than government, as they were thought to deliver services faster and with less bureaucracy. However, changes toward market governance had significant consequences. As Rhodes (2007) depicts in the U.K., these changes “fragmented the systems for delivering public services and created pressures for organisations to cooperate with one another to deliver services. In other words, and paradoxically, marketization multiplied the networks it was supposed to replace (Rhodes, 2007).” Secondly, neoliberalism advocated consumerism as a complement if not substitute for citizenship (Johnston, 2007). As Johnston (2007) articulates, “as states deferred responsibility for environmental regulation, consumers became increasingly responsible for self-managing environmental risks through consumption decisions (Johnston, 2007).” Yet, consumers were not equipped to do so by themselves.

In the same era, there was increasing evidence of major declines in global fish stocks, as evidenced by the collapse of the George’s Bank cod stocks in Canada (Hilborn and Hilborn, 2012; Pauly, 1995).

Recognising government’s inability or unwillingness to address these major declines, non-

state actor groups stepped in to fill this gap in governance (Sutton and Wimpee, 2008). Through the organisational prowess of environmental non-governmental organisations (ENGOS), the financial support of major foundations and the recognition of possible shortages in the supply chain retailers and major fishing companies began to work together. This network of actors began to form a coalition, which eventually evolved into a social movement.

1.1.2 What is the Sustainable Seafood Movement today?

Today, the Sustainable Seafood Movement (movement) is a transnational network of 10 actor groups -- ENGOS, foundations, certification schemes, verification experts, retailers/food service providers, chefs, the fishing industry, academics, consumers, and the media. As Tarrow (2011) notes, social movements are formed and sustained through a common cultural frame of the collective challenge (Tarrow, 2011). As documented in Article II of this thesis, the 10 actor groups of the Sustainable Seafood Movement generally share a similar cultural frame that there are sustainability issues in many fisheries, that fisheries practices can be made more sustainable and that market-based approaches can improve the sustainability of fisheries by themselves or in concert with government regulation. From this common understanding, three objectives of the movement have emerged – 1.) Improve the sustainability of the seafood supply chain, 2.) Use the pressure of the seafood supply chain to improve the sustainability of the fishing industry and 3.) Use the pressure of the seafood supply chain and the fishing industry to improve government regulation.

These objectives are echoed in the strategic plans of the charitable foundations supporting and participating in the movement, such as the Packard Foundation. The Packard Foundations' 2012-2016 strategy states,

“[at] its core, the markets transformation strategy rests on theory of change that consumers and businesses that demand sustainable seafood can motivate fisheries to improve their management practices to be able to sell their products into these markets. With time, businesses and fisheries can also become advocates for fishery policy changes to help level the playing field so that poorly managed fisheries do not undercut the market (Packard, 2012).”

In order to implement this theory of change, the Sustainable Seafood Movement had to develop a governance regime in the supply chain in order to drive the change it sought.

1.1.3 Non-state market driven governance

The initial actors of the Sustainable Seafood Movement recognised the success of market-based incentives in the forestry sector and sought to expand this type of approach to the seafood supply chain (Ward and Phillips, 2008). To that end World Wildlife Fund partnered with Unilever to establish the Marine Stewardship Council (MSC), a standard setting organisation for sustainable seafood and traceability. MSC was created over several years through multiple consultation processes with supply chain actors and ENGOs, completely independent of any governments (Cummins, 2004). In establishing the MSC, movement actors began to lay the basis for a non-state market driven governance regime in the seafood supply chain. Other governance tools would be added to this regime over time, such as seafood sourcing policies, seafood rating programs, fishery improvement projects, voluntary labelling guidelines and traceability schemes.

Cashore (2002) first articulated the framework of non-state market driven governance in the forestry sector (Cashore, 2002). This type of governance occurs in the supply chain and does not derive its authority from the state. Supply chain actors such as the seafood processors, retailers, food service providers and many others participate because other actors in the Sustainable Seafood Movement, typically ENGOs, certification schemes and the media, either encourage, shame or cajole them into participating (Gutiérrez and

Morgan, 2015). In agreeing to participate these actors legitimatise the role of actors who had not previously had a role in the supply chain, such as ENGOs and certification schemes. Compliance with this regime occurs through evaluation and verification of adherence to the standards of a certification scheme or seafood sourcing policy, not through government regulations and fines. Penalties include loss of market access in the supply chain.

Not all actors in the seafood industry participate in the movement let alone the non-state market driven governance regime that it has created. While the Sustainable Seafood Movement seeks to achieve its objective to improve the sustainability of the seafood and the fishing industry through the supply chain, it also seeks to put pressure on governments to reform fisheries on a broader scale (Packard, 2012). To evaluate the efficacy of the movement's theory of change, a comparison of its initial conceptual models to influence supply, demand and governance of fisheries will be made with the cultural models that actors hold today. In doing so, weaknesses are exposed in the movement's theory of change.

2.1 Methods

This analysis brings together three articles that evaluated the individual factors – supply, demand and governance – that underlie the Sustainable Seafood Movement's theory of change. Each of these articles sought to uncover the initial conceptual models of the movement's organizers and the actual cultural models that today's actors in the movement hold about these factors and how they relate to each other. A conceptual model is the idealized explanation of a phenomena or process. A cultural model is an informants' understandings of how a process or phenomenon operates, be it climate change, sustainable fisheries management, or some other aspect of nature or culture (Kempton et al., 1996). Cultural models can be shared among individuals but often not completely; there may be

variation within and between groups. Elements of a cultural model can emerge from interviews and patterns of discourse evident in transcripts or other documents, such as common motifs that multiple members of the same group express when speaking about an issue (Quinn, 2013).

To develop these cultural models, consumer interviews ($n=194$) and expert interviews ($n=27$) were conducted. These were supplemented by analysis of grey and peer-reviewed literature. The interviews and literature review focused on the U.S. and U.K. markets. These market were selected since foundations targeted the support of the movement first in the United States and European countries, particularly the Organisation for Economic Cooperation and Development (OECD) countries, as gains could more quickly be obtained in countries with strong regulatory regimes (Packard, 2007; 2012). Of those countries, the United States and the United Kingdom were most appropriate for this study given the common language, long-standing “special relationship” with a documented bi-directional exchange of innovation (Griffith et al., 2006; Tarrow, 2011), people and advocacy campaigns between the two countries (e.g., after U.K. ENGO supermarket rankings proved successful, U.S. ENGOs adopted them). While there are similar characteristics between the two countries, their difference in government structure and implementation of neo-liberal policies, create a sufficient contrast to draw lessons from.

Therefore, U.K. and U.S. consumers as well as actors in the Sustainable Seafood Movement and government officials were interviewed in order to probe the cultural models that they hold about sustainable fisheries and market-based approaches. The results section will go into greater detail on the approaches used for each cultural model.

For all the interview data, NVivo 10 was used for coding and text analysis. The interview transcripts were then analysed in NVivo 10 using an inductive approach to coding to

develop a cultural model as described in Naomi Quinn's (2013) "Finding Culture in Talk: A Collection of Methods" and Kempton et al.'s (1996) "Environmental Values in American Culture" (Kempton et al., 1996; Quinn, 2013).

3.1. Results

This section will summarize the results of the aforementioned articles, which probe the cultural models that underlie the factors that compose the Sustainable Seafood Movement's theory of change.

3.1.1 Demand

3.1.1.1 What is the conceptual model?

Gutierrez and Thornton (2014) conducted a literature review to identify the conceptual model behind market-based incentives, such as seafood eco-labels (Gutierrez and Thornton, 2014). The literature indicated that the initial model was premised on consumer demand incentivising sustainable seafood production. The assumptions of the model started with the premise that, there are consumers who are aware and care about the environment and want to buy "sustainable" or "environmentally responsible" goods. Second, these consumers have clear information about the goods they are buying. Third, a label or mark, such as an eco-label, provides a clear signal of environmental sustainability that enables consumers to demonstrate demand for these products in the marketplace.

Fourth, the more consumers purchase an eco-labelled product, the more collective demand or "pull" is created for retailers to provide such products. Fifth, the "pull" from retailers to buy certified sustainable product incentivises fishermen to modify their practices to be more sustainable.

When Gutierrez and Thornton compared these assumptions to the literature to date, they found that many of the assumptions in the model were not supported. Studies indicated that

while there is some awareness by consumers of issues related to sustainable fisheries that this is not wide-spread and that the public does not generally prioritise sustainable fisheries over other public policy issues (Pieniak et al., 2013; Potts et al., 2011). With respect to the second assumption, studies have demonstrated that consumers do not necessarily have clear information and even if they are aware of issues and want to make sustainable purchases they may not have sufficient or may have conflicting information on which to base their decision. Hallstein et al (2013) studied the impact on sales when consumers were presented with a traffic light scheme on their seafood products (green means buy, yellow means buy with caution and red means avoid buying) and mercury information in a regional supermarket chain in the San Francisco Bay Area of California (Hallstein and Villas-Boas, 2013). Examining sales before, during and after the transition to the labelling scheme, they found a statistically significant 15.3% decline in overall seafood sales, largely driven by a statistically significant 41.3% decline in the sale of yellow labelled seafood on the mercury safe list. While the yellow labelled product on the low mercury list was intended to indicate that the consumer should be cautious about purchasing this seafood product but not necessarily avoid it altogether, many consumers appear to have treated the product like a red labelled product and avoided purchase. There was no statistically significant difference in the sales of red or green labelled seafood. In this example, labelling did not resolve the information asymmetry between the buyer and seller; rather it complicated it and caused many consumers to avoid the purchase.

Even with the information problems, there is some evidence to support the third assumption that consumers are demanding products with eco-labels, such as MSC. Roheim et al (2011) found that there was a price premium and slightly higher volume of sales for MSC labelled pollock in London grocery stores versus non-labelled Pollock (Roheim et al., 2011). Other studies have also found price premiums for MSC and other environmental

labels on seafood products (Sogn-Grundvåg et al., 2014). This feeds into the fourth assumption that because of consumer demand and the growth of corporate social responsibility retailers are sourcing more sustainable seafood. While there is some evidence for consumer demand, it is difficult to differentiate between that and the growth of sustainable seafood sourcing policies. As evidenced by the reviews that U.S. Greenpeace (2014) and the U.K. Marine Conservation Society (2013) respectively conduct on the sustainability policies of retailers, there has been an increase in the last decade of the number of retailers who have seafood sustainability policies (MCS, 2013; Mitchell, 2014). Further, the robustness of these policies has grown with the increased scrutiny. The 2014 U.S. Greenpeace report gave 22 of 26 rated supermarket chains a passing mark for their sustainable seafood policies (Mitchell, 2014). Given the proliferation of these policies, it is difficult to separate whether consumer demand is increasing or retailers sourcing more and more certified sustainable product have changed consumer's choices.

Finally, the fifth assumption is that because of this demand by consumers on retailers and retailers on the fishing industry sustainable fisheries will be incentivised. Several studies have debated the effectiveness of seafood certification programs, like the MSC, in improving the sustainability of fisheries. While there is not strong agreement on the outcomes of these programs, there is evidence of improvements, even if marginal, in several participating fisheries (Agnew et al., 2012; Froese and Proelss, 2012b; 2012a; Gutiérrez et al., 2012).

3.1.1.2 What is the cultural model?

Given that several of the assumptions of the conceptual model did not hold, Gutierrez and Thornton surveyed consumers in Southeast England (London and Oxford) and Washington, DC to ascertain what they understood about seafood eco-labelling, what labels they

recognised and what they interpreted sustainable to mean (Gutierrez and Thornton, 2014). The research took part in two phases. The first phase involved qualitative interviews with 14 participants in Oxford, England and 14 participants in Washington, DC. This was used to inform the development of survey administered to 168 people through random-intercepts in London and Washington, DC.

The results indicated that 76.7% of the Washington, DC sample and 60.0% of the London sample had purchased one or more of the eco-labels shown in the survey. The most recognised labels were Organic or Dolphin-Safe. When those labels were excluded from the samples, then only 30.2% of Washington, DC sample and 43.8% of the London sample had purchased one or more of the eco-labels. The authors concluded that the sampled consumers most recognised and reported buying those labels that had been long established and that it was culturally understood what they represented. With respect to what the sampled consumers ($n=192$) understood sustainable to be, the vast majority of the respondents could offer an explanation if not a concise definition. The authors identified nine themes that emerged from the responses. These themes included environmental responsibility, perpetual availability, use, production, avoiding environmental impact, a balanced system, reliable/quality, and I don't know. The typical articulation could be summarised as “sustainable products are there to be used over the long term without harming the Earth, but that human action is required by producers and consumers to ensure they are sustainable (Gutierrez and Thornton, 2014).” Given the high recognition of eco-labels and the understanding of what is sustainable, consumers clearly hold a cultural model that their purchases can contribute to sustainable practices.

3.1.1.3 What is the implication?

The original cultural model of using market demand to incentivise sustainable seafood products in the supply chain assumed that the consumer would play a large role. The

evidence in the literature and the strategic documents of major foundations, such as the 2005 Bridgespan found that it was more efficient to influence a few hundred corporate seafood buyers rather than several million consumers. Since then, the movement has focused its efforts on major corporate buyers versus consumer education via seafood cards (Jacquet and Pauly, 2007). In doing so, far less attention was given as to how to engage consumers on a large scale. Instead, several of the interviewed movement actors felt that it's better to ensure that retailers only offer consumers sustainable seafood options and so that consumers don't have to be burden with these sustainability decisions in the marketplace.

Yet Gutierrez and Thornton's work demonstrates that the sampled consumers do have high awareness of eco-labels and understanding of what is sustainable (Gutierrez and Thornton, 2014). If that is the case then, how can consumers be better engaged in these non-state market driven governance efforts to improve the sustainability of fisheries? And if they are not engaged, can broad scale sustainability sought in the movement's theory of change be achieved?

3.1.2 Governance

3.1.2.1 What is the conceptual model?

As noted in the introduction, the movement recognised that market-based incentives rooted in the supply chain offered an alternative to government regulation (Gutiérrez and Morgan, 2015; Sutton and Wimpee, 2008). The creation of market-based seafood certification programs offered the movement an opportunity to establish the foundation for a governance regime from which additional governance tools have developed. The MSC has been the most prominent of the seafood certification standards and was often seen as the most rigorous by the movement actors interviewed. Yet, other seafood certification schemes have emerged aiming to offer a similar tool to supply chain actors. We will use the model behind the MSC as the archetype of certification schemes that

have emerged from movement, and then discuss the divergence from this model in the next section.

The MSC model is based on a multi-stakeholder process to develop a standard for sustainable capture fisheries (Cummins, 2004). MSC then accredits certification bodies to assess interested fishermen against the standard (Cummins, 2004). Interested fishermen or processors, initially incentivised by a price premium and later on by market access, pay an independent certification body for this assessment. The assessment is publicly available for stakeholder consultation. After which, the assessment is finalised and a determination is made as to whether the fishery meets the standard. If they do, the fishery is then MSC certified for five years. The certifier conducts annual audits to ensure that the fishery is meeting any conditions of the certification and to determine if there have been significant changes in the fishery. If it is warranted, a certification could be suspended or withdrawn after an audit (MSC, 2013). Finally, the major supporters in the movement assumed as MSC increasingly became mainstreamed in the market, more and more fisheries would be incentivised to seek MSC certification and thus this form of non-state market governance would have greater influence across fisheries.

3.1.2.2 What is the cultural model?

While many of the actors in the movement support the cultural model of a robust and transparent process to evaluate fisheries against a sustainability standard, divergence has occurred amongst movement actors, as to whether MSC is only or best mechanism to play this role. Foundations, some ENGOs, like WWF, and parts of fishing industry have continued to champion the MSC over the last decade, while other actors in the movement have questioned the efficacy of MSC and its processes. In particular several ENGOs have raised concerns about the MSC consultation and objections process (Christian et al.,

2013). Others have raised concern that fisheries that are working towards sustainability rather than being sustainable have received the MSC certification (Bush et al., 2012). Finally, others have questioned whether MSC certification improves the sustainability of fisheries (Froese and Proelss, 2012a; Gulbrandsen, 2009). This has resulted in uneven support for the MSC, though not for cultural model behind seafood certification as an important governance tool in the supply chain. To that end, other certification schemes have emerged to rival MSC, such as the Friends of the Sea and Responsible Fisheries Management certification.

As Kempton et al (1996) documented in the 1990s, the differences between actors' cultural models can explain why some actors support environmental action while others do not (Kempton et al., 1996). Divergent cultural frames can result in conflict between actors in social movement (Tarrow, 2011). Yet, in order to succeed, a social movement must attract participants to subscribe to its cultural frame (McLaughlin and Khawaja, 2000).

To address the proliferation of seafood certification schemes, some actors in the Sustainable Seafood Movement have moved to create new governance tools such as the Global Seafood Sustainability Initiative (Global Seafood Sustainability Initiative, 2012). This initiative aims to reduce costs in the supply chain by benchmarking certification schemes so that retailers have a mechanism to determine equivalency of process and performance considerations within certification schemes. In theory, this may allow retailers to allow multiple certification schemes to satisfy their buying policies, potentially reducing the need for producers to obtain several different certifications to comply with various retailers' buying policies. This initiative is an attempt to develop consensus around minimum expectations for seafood sustainability standards. And in doing, so the movement's actors may continue to subscribe to a shared cultural frame around the importance of seafood certification as a governance tool.

While seafood certification schemes are a mainstreamed governance tool in supply chain, the Sustainable Seafood Movement had to develop additional governance tools to support and augment certification. This became particularly apparent when fisheries that had undergone a confidential MSC pre-assessment were clearly not going to be certified. Sometimes this was a result of these fisheries having limited long-term data about the target stock or sometimes it was weak government regulation. To address this actors in the Sustainable Seafood Movement, particularly foundations, ENGOs and major retailers, developed what became known as fishery improvement projects. Fishery improvement projects help fisheries become ready for MSC certification should they choose, or simply to improve the sustainability of their operations (Conservation Alliance for Seafood Solutions, 2014; WWF, 2013). Through conservation covenants or other agreements fishers, ENGOs, retailers and in some cases governments, develop a plan to improve the sustainability of the fishery. A fishery improvement project can be audited and tied to access to the supply chain, creating an obligation on the participating fishermen to comply. Critical to the mainstreaming of seafood certification and fishery improvement projects has been the adoption by large retailers of sustainable seafood sourcing guidelines that require seafood certification or participation in fishery improvement projects. To ensure consistency in the formulation of these policies, U.S. ENGOs through the Conservation Alliance for Seafood Solutions have developed a “Common Vision for Environmentally Sustainable Seafood (Conservation Alliance for Seafood Solutions, 2008).” Further, as mentioned above, U.S. Greenpeace and the U.K. Marine Conservation Society rate major retailers on the robustness of their seafood sustainability policy (MCS, 2013; Mitchell, 2014). Thus, the movement actors have developed governance mechanisms across the supply chain. That is to say seafood certification and fishery improvement projects evaluate fisheries and ensure compliance through potential loss of market access. This

market access is determined by the seafood sustainability policies that retailers set, which ENGOs monitor to ensure they are robust. This non-state market governance regime has developed governance tools to incentivise sustainability practices across the supply chain, evaluate the implementation through audits and reviews and ensure compliance through movement actors policing the supply chain. While the initial cultural model was built around seafood certification the tenets of transparent policies, audits and evaluations and incentivising compliance through loss of market access or public shaming have come to be the core components of this cultural model for governance.

3.1.2.3 What is the implication?

Provided that the Sustainable Seafood Movement can continue to react and evolve its cultural model of supply chain based governance, the movement is positioned to continue to substantially influence the U.S. and the U.K. supply chains and beyond. However, since the movement has spent so much time looking inward to develop these governance processes, there has not been as clear a process articulated for working with governments. While the seafood certification schemes and fishery improvement projects often rely on government regulation as the basis from which to seek improvement, the movement's coordination with government has been on a case by case basis and often very ad-hoc. As Article III examined, the non-state governance tools have not been formally aligned with state governance tools to achieve maximum impact. Broad scale changes in global fisheries will likely be limited without this alignment. Yet, this will be a challenge for the movement, given the diversity of actors within its ten actor groups. While there are dominant actors within the movement, its horizontal nature makes it such that no single group or coalition can speak for the entire movement. This could present a challenge for coordination between the movement and government without a clear strategy for

coordination. The movement has developed strategies to ensure consistency on retailer engagement and fishery improvement projects in the past, so the potential for such a strategy on government engagement is there. Without coordination between the movement's non-state market governance regime and governments, the scale and scope of transformation in global fisheries will be limited to those that the movement actors can incentivise or cajole to participate rather than a state mandate across all actors in the seafood supply chain.

3.1.3 Supply

3.1.3.1 What is the conceptual model?

As discussed throughout this thesis, the Sustainable Seafood Movement arose in an era of declining global fish stocks and the rise of neo-liberal approaches to public policy in the United States and the United Kingdom (Jacquet and Pauly, 2007). The initial actors of the movement held out a conceptual model that there were substantial declines in global fish stocks and that through the self-interest of business new market-based tools could be developed to address these declines. As Sutton noted, “knowing how politically potent industry can be, conservationists hoped that leading seafood companies – acting in their own enlightened self-interest – might be persuaded not only to change their own business practices but also to lobby for meaningful management reforms (Sutton and Wimpee, 2008).”

3.1.3.2 What is the cultural model?

Article II identified points of agreement and disagreement in the actors' cultural frame on the current supply of sustainable fish stocks, based on the review of grey-literature, peer-reviewed articles and expert interviews. One of the principle points of disagreement that emerged in our interviews and in the literature has been the degree to which global fisheries

are overexploited (Daan et al., 2011; Murawski et al., 2007; Pauly, 1995; Worm et al., 2006; 2009). ENGOs, foundations and the media tend to subscribe to the viewpoint the global fisheries are significantly overexploited and near collapse in several places. Academic opinions vary from calling for urgent action to address dire impacts, to oceans as models of relative resilience (Hilborn and Hilborn, 2012; Worm et al., 2006). Retailers, food service providers, chefs, certification schemes and verification experts express the view that there are sustainability issues in capture fisheries, leading to shortages in supply, but also note recent success stories, such as the U.S. announcement to end overfishing (NMFS, 2014). The fishing industry tends to be the most cautious about the urgency of the situation, often agreeing there are sustainability issues in other fisheries but not necessarily their own. While disagreement exists on the severity of exploitation in capture fisheries, there have been several influential processes that have helped to formulate a shared cultural frame in the Sustainable Seafood Movement. Prominent among these are regular, stakeholder workshops and stakeholder meetings that are part of the program development of the MSC, meetings of the Conservation Alliance for Seafood Solutions, the U.K. Sustainable Seafood Coalition and regular interaction between movement actors at the major seafood expos (Conservation Alliance for Seafood Solutions, 2008; Cummins, 2004). As a result, the movement's actors generally agree that fishing practices can be more sustainable and in many places fish stocks need to be rebuilt. All actors that we interviewed or examined their organisation's materials also generally recognise that market-based approaches can improve the sustainability of fisheries by themselves or in concert with government regulation. The actors in the movement generally share this cultural frame that not all seafood in the supply chain is sustainable and that improvements can be made through the supply chain. The movement has used this shared cultural frame to develop a cultural model for

improving the supply of seafood.

Based on the literature review and interviews with movement actors, it emerged that self-interest underlies the cultural model of how the control of seafood supply can be used to improve fisheries. Interviews with retailers and others in the supply chain corroborated this account by noting that there was increasing recognition by supply chain actors of shortages for certain species and that something needed to be done to maintain a steady supply. There was also another component to this self-interest and that is as the movement was coalescing, there was also increasing recognition in the private sector of the importance of brand identity and corporate social responsibility (Clark and Hebb, 2005). These concepts are clearly distinct, but are related since the increase in corporate social responsibility became an industry norm across multiple commodity chains. As a result, brand identities can be tarnished for failure to adopt this norm. This can be demonstrated by decrease in stock prices, bad publicity or both. Recognising, these phenomena, the actors of the movement developed an effective model for incentivising participation in the movement's non-state market driven governance regime through a naming and shaming. That is to say, some actors in the movement, typically ENGOs and the media, would publicly name and shame supply chain actors, such as fishermen, retailers, and food service providers through boycotts, public reviews of their sustainable seafood sourcing policies, as well as reviews of industry practices (e.g., labelling practices). As those interviewed from the ENGO, retailer and fishing industry sectors indicated, this naming and shaming was typically followed by an approach to work proactively together by either the same actor or another actor in the movement to address the issue. The supply chain actor was then compelled out of self-interest to maintain their brand identity to participate in either a commitment to or improvement of their sustainable seafood sourcing policy or to participate in other voluntary guidelines, such as the U.K. Sustainable Seafood Coalition's voluntary guidelines on

seafood labelling. In this way, more supply chain actors came to participate in the movement's non-state market governance regime. Drawing on Suchman's work (1995), Cashore (2002) describes this as pragmatic legitimacy that is to say that acting out of their own self-interest the supply chain actor acquiesced to the movement's demands (Cashore, 2002).

Supply chain actors did not always comply with these approaches, in fact on several occasions members of the fishing industry or retailers pushed back on the demands being made of them (Petersen, 2013; Ward and Phillips, 2008). Further, some supply chain actors recognised these actions as the right thing to do without being named and shamed. In doing so, they came to participate in the movement's governance regime and thus granting it moral legitimacy, i.e. legitimising the regime through their participation because they see it as the right thing to do (Cashore, 2002).

Evidence exists to support this cultural model as incentivising change in some fisheries. Greenpeace's well-publicised boycotts of Trader Joe's and Loblaw for failure to adopt a sustainable seafood sourcing policy resulted in changes within both companies' policies (Ju, 2009). Likewise, the U.S. Greenpeace and the U.K. Marine Conservation Society periodic review and rating of retailers' seafood policy have influenced changes in the supply chains in both countries. Representatives from retailers interviewed cited concerns about their rating as motivating changes in their practices.

Finally, studies, reviews and exposés by ENGOs, the media and academics have also named and shamed supply chain actors for failure to substantiate labelling claims on seafood products, for lacking traceability in supply chains that results in product mislabelling (also known as seafood fraud) and for using weak seafood certification schemes (ClientEarth, 2011; James Sullivan Consulting, 2012; MCS, 2013; Mitchell, 2014).

All of this has resulted in changes within the supply chain. Indicators of this include the 2014 U.S. Greenpeace report, which gave 22 of 26 rated supermarket chains a passing mark for their sustainable seafood policies (Mitchell, 2014). In the U.K., ClientEarth's report on unsubstantiated sustainability claims on seafood product led to the establishment of the U.K. Sustainable Seafood Coalition. This coalition is developing voluntary labelling guidelines, with participation by the majority of U.K. retailers.

This has resulted in incentivising 373 fisheries participate in the MSC program, 260 of these are certified and 113 are in assessment (MSC, 2015). This represents around 12% of the annual global harvest of wild capture fisheries when all become certified (MSC, 2015). At present over 27,000 seafood products carry the MSC eco-label.

3.2 What is the implication?

Of the three factors – supply, demand and governance – that compose the Sustainable Seafood Movement's theory of change, the movement has been most successful at building a common cultural frame around the need for a sustainable supply of seafood as well as cultural model for incentivising that supply through triggering either self-interest or a moral obligation in supply chain actors. As a result, there have been improvements in some seafood supply chains (Gutiérrez et al., 2012). If the weaknesses with the demand and governance models could be addressed the movement's sustainability improvements could be amplified across the supply chain.

Discussion

4.1.1 Where are we in implementing this theory of change?

The previous section probed the Sustainable Seafood Movement's conceptual model of theory of change vis-à-vis the actual cultural models that the movement actors held. This

analysis found that the initial conceptual model for demand had evolved and that actors in the movement now focused on influencing major corporate buyers instead of the public. This minimised the role for the public, even with evidence of consumers increasingly recognising and purchasing eco-labels, as well as having a meaningful understanding of what is sustainable.

The governance model has focused on building a meaningful supply chain based governance regime, but has yet to strategically connect that regime to government led fisheries management on a broad scale in order to achieve sustainable fisheries. Finally, the most successful model has been the supply model, as it has aligned both the conceptual model and the cultural model of triggering self-interest and moral obligation to stimulate action and participation by supply chain actors in the movement.

4.1.2 What is missing from this approach?

4.1.2.1 Citizen Engagement

In rooting this approach in the supply chain, as opposed to a government system, the movement has focused its engagement with the public on its role as a consumer instead of that of a citizen (Akenji, 2014). As a consumer, the role is centred on an individualistic choice to buy the “right” product in order to ensure sustainable fisheries in the future (Konefal, 2013). Yet, neither governments nor the Sustainable Seafood Movement has articulated what a sustainable seafood consumer is in terms of weekly seafood consumption and food waste. While initially, the movement did engage consumers on species specific boycotts, such as “Give Swordfish a Break,” these boycotts had decreasing effectiveness over time, alienated the fishing industry and switched demand to other species creating other knock on effects (Packard, 2007). Since then, the movement has avoided the message of buying less or calling for public boycotts of a single species. Instead the movement’s efforts have focused on making the supply chain as sustainable as

possible through collaborations with retailers, processors, restaurants, food service providers, and chefs. These initiatives include everything from traceability to reducing food waste in fish processing. Since the priority has been improving sustainability in the production side of the supply chain, the outreach to consumers has not received the same attention.

The role as a consumer focuses the public's interaction with seafood as a commodity, as opposed to public good/natural resource (Konefal, 2013). The recognition of participating in the act of protecting a wild salmon swimming upstream to spawn or a bluefin tuna racing through the ocean may be lost as a consumer buys a vacuum-pack fish filet. In this model, consumers indirectly advocate for healthy oceans through their purchases.

Movement actors, particularly ENGOs, retailers and the fishing industry, advocate for government reform of fisheries. Yet, ENGOs are the principal group encouraging citizen engagement. They encourage citizens to fulfil their civic duties by sending letters/emails to politicians and regulators about specific issues, but the frequency and impact of these campaigns varies. The public's role as a consumer is activated more regularly through their interactions with supermarkets and restaurants, than that of a citizen. Yet retailers and food service providers have not used their relationship with the public to incentivise their participation in government campaigns. Rather they have focused on offering their consumers more sustainable options, sometimes with and sometimes without explanation of the importance.

Focusing on the public's role as a consumer also takes away the collective identity that a citizen has for a shared resource (Konefal, 2013). Citizens are often portrayed as those that have rights and responsibilities in society and so their role is part of a larger whole (Micheletti and Stolle, 2012). The consumer "as king" emphasises an individualistic identity that is independent from another consumer (Johnston, 2007). The collective

agency of the public is lost and thus a potent driver for improving the sustainability of fisheries.

Some have advocated for the public to play the role of “citizen-consumer” that votes with their wallet and at the ballot box. The challenge in this role is that the duality of citizen and consumer necessitates a hierarchy. As Josee Johnston (2007) argues, the consumer usually wins out over the role of the citizen (Johnston, 2007). Johnston advocates for a citizenship grounded in “a commons-based” understanding that re-embeds markets in social structures and prioritises the collective good over the individual (Johnston, 2007). Micheletti (2012) echoes this by detailing the changing dimensions of citizenship from one of a citizen-state relationship to that of sustainable citizen, which considers the global dimensions of their responsibility to society and the environment beyond their community to the global community as well as to other generations (Micheletti and Stolle, 2012). Others propose the reframing of the citizen as an “environmental citizen,” that is someone that understands environmental problems and feels a sense of duty to address them through their consumption and community actions (Hobson, 2002; 2013). In these constructs, citizens change their behaviour to reduce their individual footprint on the environment, such as water conservation or carbon reduction to contribute to a greater collective good. The action is separate and apart from their engagement with the state or other governance processes. Activating the public’s role as stewards may help to bridge these roles as both citizen and consumer. Marine capture fisheries are the last wild-capture food source. Therefore, fish are both food and a natural resource (Olson et al., 2013), and thus have a unique status in food and ecological systems. By engaging the public as stewards for this food source and natural resource, the hierarchy of the citizen-consumer hybrid may be overcome, as sustainability should be the overarching principle for both the food system and the ecological system (Welchman, 2012).

While previous social movements often reacted against the state's actions and/or advocated for new state policies, the Sustainable Seafood Movement now directly influences the management of public goods as a result of its innovations such as certification schemes and fishery improvement projects. With the same intensity that the movement has developed a non-state market driven governance regime in the supply chain to provide more sustainable products, a mechanism is needed to engage the public as steward/consumer/citizen at the macro-level to hold private and public governance systems accountable. But to be effective, a new mechanism outside of the movement and government must be created, as both systems cannot propel changes in fisheries governance while at the same time energising the public as citizens/stewards and consumers.

While it would be logical that existing ENGOs could play this role, since some participate in or sit on the periphery of the movement, it is questionable whether they could objectively facilitate consumer/citizen/steward engagement for purposes of accountability, when they participate in the creation and operation of many of these private governance mechanisms. Further, new research indicates that it cannot be assumed that organised interest groups represent the interests of the average citizen (Gilens and Page, 2014; Konefal, 2013). Using 1,779 instances of public opinion on proposed U.S. policy changes, Gilens et al (2014) developed a single statistical model to evaluate the independent impact of policy change on three variables – average citizen's policy preference, the policy preferences of economic elites, and the positions of interest groups (Gilens and Page, 2014). Economic elites in this study are considered “major investors” or the “civil oligarchy.” They have significant wealth and connections to the highest levels of power. The preferences of the average citizen and economic elites were highly correlated across issues, but interest groups are not substantially correlated with the preferences of average

citizens. When all three variables are tested against each other, average citizens have little or no influence over policy at all. Economic elites and organised interest groups have substantial policy influence. They note that while the average citizen has little to no influence on policy their preferences are often positively correlated with the interests of economic elites and so they may “win” in some cases. While Gilens and Page did not examine any environmental interest groups in their data set, it is plausible that similar findings may hold in the context of fisheries reform. If that is the case, it cannot be assumed then that actors in the Sustainable Seafood Movement are reflecting the average citizen’s opinion. If the movement cannot be assumed to represent the average citizen, how can citizens be included in this public-private fisheries governance system?

The public plays multiple roles, yet some are activated more than others. For instance, their engagement as a consumer continues on a regular basis, but their role, as citizens and stewards, is not engaged to the same degree. As consumers, the public’s role in incentivising sustainable fisheries is through their individual purchases, i.e., at the micro level. While in their role as citizens, the public can engage with other stakeholders in public consultations, and through electoral process, i.e. at the macro level. If the level of consumer/citizen engagement was better aligned at the macro-level, perhaps the public could play a more integral role in incentivising sustainable fisheries. Instead of asking the public as consumers to make multiple sustainability decisions on each shopping trip, the onus should be to engage the public in demanding at a macro-level that the public and private fisheries governance system only provide them sustainable seafood. Thus enabling their consumer role and citizen role to be exercised at a similar scale.

4.1.2.2 Accountability

Aligning the consumer-citizen-steward roles at the same scale requires the need for a mechanism of engagement. Accountability could be an important engagement mechanism.

Accountability exists in both private and public governance system, but these are separate and not well-known processes. In non-state market driven governance, accountability mechanisms often focus on accountability between actors. For instance an ENGO and retailer may collaborate on a seafood sourcing policy (Conservation Alliance for Seafood Solutions, 2008). That ENGO is responsible for advising that retailer, and that retailer is responsible for meeting the commitments in the policy. And another ENGO may publicly evaluate the robustness of the retailer's sustainability policy (MCS, 2013; Mitchell, 2014). While the sustainability policy and the report evaluating the policy may be publicly available, the engagement of the public either as a citizen or consumer is often limited to reading the sustainability policy on the retailer's website or reading the ENGO report after it's released.

Government accountability measures for fisheries management range from citizen-suit provisions in many legal statutes to accountability measures legally required in fishery management plans to oversight by inspector generals and legislative authorities. The degree to which the public as citizens/stewards engage in government led fisheries management processes varies. Anecdotal evidence suggests that on largely publicised issues, like the EU fisheries discard ban, there is substantial public engagement (Harvey, 2014). Yet it is not clear that this level of engagement is maintained across all fisheries management actions. More recent studies indicate the public has a very general understanding of fisheries management issues (Pieniak et al., 2013; Potts et al., 2011). Both governance mechanisms need to improve their public accountability mechanisms. They likely cannot do this alone and as such new citizen engagement organisations are needed to bridge these governance systems. While some could argue that efforts like the Ocean Health Index are starting to facilitate this type of accountability, those efforts are not specifically designed to develop accountability tools that capture both private and public

governance systems' performance in order to engage the public. For citizens to engage in this dual governance system information and knowledge is key. Because of the opaqueness of these separate but interdependent systems, citizen engagement will be limited until new engagement and accountability tools are developed. These tools could act as boundary objects, that is to say models, report cards, etc. that allow a broad spectrum of the public to engage and coordinate their actions on a common issue (Crona and Parker, 2012).

Boundary objects such as a.) Information for citizens on how their tax and food dollars contribute to sustainable fisheries, b.) Information on the status of their nations stocks and global stocks, c.) Grassroots networks to improve understanding on the importance of fisheries and oceans, d.) Clarification of what a sustainable seafood consumer is in terms of weekly consumption, food miles and food waste. Finally, this necessitates coordination between both governance systems. Thus, any system of accountability should include a mechanism to evaluate the effectiveness of coordination between public and private governance systems.

A citizen engagement organisation could fill the role of a bridging organisation working to facilitate citizen involvement in both public and private governance systems, but more research is needed into this area (Crona and Parker, 2012). In this evolved system, the boundaries between public and private governance would become more fluid as the system becomes accountable as a whole instead of its separate parts. Ultimately, the goal of this system would be sustainable fisheries for future generations achieved through improved citizen/consumer/steward understanding and engagement in fisheries management. A more robust public-private governance system because of this enhanced accountability could result in a coordinated system focused on responsible ecosystem stewardship rather than merely purveyors of sustainable seafood commodities.

5.1 Conclusion

The Sustainable Seafood Movement has successfully influenced the supply chain and consequently U.S. and U.K. fisheries management by employing a theory of change predicated on market-based incentives to improve the sustainability of the seafood supply, the demand for sustainable seafood products, and the governance of this system. The movement has been most successful at influencing the supply of seafood, but more needs to be done on governance and demand. The next phase for both the Sustainable Seafood Movement and government managers will be to improve their coordination so that private governance and public governance are maximising their effectiveness through coordination. Further, bridging organisations focused on public engagement through the development of accountability tools will be critical to bring the public back into the sustainable fisheries/seafood dialogue. By improving the accountability and transparency of both public and private governance systems, the governance systems that have propelled drastic changes in the United Kingdom and the United States over the last two decades, will be able to be more resilient and maintain and expand the gains they have made. As the Sustainable Seafood Movement matures and U.S. and U.K. fisheries regulators are able to turn the corner on overfishing, the theory of change that today's sustainability efforts are predicated on must evolve to include the public to a greater extent through new accountability measures to ensure sustainable fisheries into the future.

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Conclusion

The present era of fisheries governance is extremely dynamic. Within the last four years of this research, the public policy debate has transitioned from research evaluating the effectiveness and implications of seafood certification schemes, to studies examining the suite of private governance mechanisms impacting fisheries management. This thesis furthers fisheries governance research by framing these efforts under the umbrella of the Sustainable Seafood Movement, analysing the roles of the actors in the movement and evaluating the effectiveness of the cultural model the movement is operating by to incentivize change. In doing so, this thesis answers its original research questions (see below), which aimed to understand the actors driving this non-state market driven governance mechanism.

- a. Do market-based tools, particularly eco-labels, incentivise consumer participation in improving the sustainability of seafood supply chains?
(Article I)
- b. What is the Sustainable Seafood Movement? Who are the key actors, what roles do they play and what tools are they using to mainstream sustainable seafood in U.K. and U.S. markets? (Article II)
- c. What are the implications of weak coordination between non-state market driven governance (private governance) and public governance for fisheries sustainability? (Article III)
- d. How can public and private governance regimes be better aligned to ensure fisheries sustainability through the active participation of the public? (Article IV)

In doing so, the following aims and objectives were examined:

- a. To identify obstacles to consumers' understanding and responding to sustainable seafood messages;
- b. To probe the roles of members of the Sustainable Seafood Movement and explore the tools they have used to develop a non-state market driven governance regime in the seafood supply chain;
- c. To analyse the U.S. and U.K. regulatory regimes (public) in comparison to the non-state market driven governance regime (private) of the seafood supply chain and the implications of weak coordination;
- d. To identify a way that the public and private governance regimes can be better aligned in order to deliver sustainable fisheries in an open and accountable way through public engagement.

While this study initially sought to understand the role that consumers played in seafood certification, what was discovered along the way was a much larger and more significant suite of non-state market driven governance (private) tools based in the seafood supply chain that is influencing fisheries management (Articles II-IV). What is clear is that the Sustainable Seafood Movement has successfully established itself not only as a social movement but also as a stakeholder and agent of change in private and public governance (Article II). The movement has facilitated change in U.K. and U.S. seafood supply chain by utilizing a theory of change focused on improving the supply of, demand for sustainably caught fish, and governance of marine capture fisheries (Article II-IV). By focusing efforts on the demand side, and particularly corporate retailer and food service provider demand, incentives for change have been leveraged in the supply chain (Packard, 2012). Mechanisms to facilitate these incentives, such as certification schemes and fishery improvement projects, have led to non-state market driven governance schemes that are

rivalling, complementing and substituting government-led fisheries governance (Article III). Rivalries occur when private and public governance systems perform the same function and compete for market recognition, e.g., eco-labels. Private and public governance systems complement each other when their objectives align, such as through fishery improvement projects. And at times the products of both governance systems are substitutable, such as seafood guides. Both governance systems continue to monopolise certain roles, such as flag state responsibility, but that may change over time. Given the enormity of the global fisheries issues, and the limited resources available to manage them, both governance systems would be more effective if they formally coordinated their efforts (Article III).

The side effect of the Sustainable Seafood Movement's private governance regime has been the minimisation of the public's role (Article IV). In the short term, placing consumers in a secondary role has focused resources on critical points, e.g. retailers, in the supply chain, that spur significant change. In the long term, the lack of awareness and engagement of the public in their roles as consumers and citizens could undermine support for both public and private fisheries governance because they do not understand the importance of these governance systems in order to value them.

Thus the funders of public and private governance systems, i.e., legislatures and foundations, may be able to lessen or eliminate funding without public outcry. Only through new actors, such as citizen engagement organizations, can the public be engaged as citizens. Accountability tools for the entire system, public and private, will be a critical means to successful citizen engagement. While Article IV suggests a bridging organisation is needed to engage the public in holding the public-private fisheries governance system accountable, more research is needed in this area. Who will fund these efforts and who is positioned to lead these efforts? What are the critical citizen engagement efforts that are

needed? This thesis can only propose ideas for further study and highlight the need for more active exploration and experimentation to engage the public as citizens, stewards and consumers in the quest for sustainability.

While this thesis has contributed to the fisheries governance literature, it has its limitations in its applicability, as the case studies were centred in two highly developed countries – the United States and the United Kingdom. Further, because of funding constraints the consumer surveys were not a representative sample of the cities where they occurred. This limits the surveys' explanatory power. Finally, because the original research questions focused on the roles of the actors in the Sustainable Seafood Movement with respect to seafood eco-labelling and not the larger governance phenomena, the expert interview questions may not have sufficiently probed the developmental process of the Sustainable Seafood Movement. To address this concern, multiple background discussions occurred with informants. I participated in several sustainable seafood forums, such as the North American Seafood Expo, and I co-authored the article on the Sustainable Seafood Movement with Dr. Sian Morgan, who has been intimately involved in multiple facets of the movement's work, i.e. auditor, foundation consultant and participant in the Aquaculture Stewardship Council dialogues.

Despite these limitations, this thesis does provide analysis and recommendations for bridging organizations to better engage the public in private and public fisheries governance regimes. Time is of the essence to ensure citizen, steward and consumer engagement. With the implementation of the European Union discard ban, the U.S. Presidential Task on Illegal, Unreported and Unregulated Fishing and Seafood Fraud starting to implement its action plan and the impending reauthorisation by the U.S. Congress of U.S. Magnuson Stevens Fishery and Conservation Act, changes will continue to rapidly occur (NMFS, 2015). How public and private governance actors respond to

these developments will determine whether competition or coordination occurs, and the extent to which the public is engaged. Ideally, leaders in both governance systems will take this opportunity to coordinate their efforts, improve their mutual accountability and improve the public's engagement.

However, if Gilens and Pages (2014) findings hold when applied to sustainable fisheries interest groups (Gilens and Page, 2014), then it cannot be assumed that the sustainable fisheries interest groups adequately represent the public, so other mechanisms must be found – citizen engagement groups. Without these groups, it is not clear at present what incentives public and private governance leaders have to include the public, as in doing so, their own power may be weakened. Yet if we are to have a successful democracy the public must have a role in the management of their natural resources and their food system (Steel et al., 2005). Marine wild capture fisheries are not like other industrialized food sources; they are both natural resources and food sources at the same time (Olson et al., 2013). Their management for extractive purposes and conservation of future ecosystem health has always been an awkward balance for society, but that dual mandate is a reflection of societal values and goals. Fish must be part of our food system if we are to feed the world; yet we must restore and sustainably manage fisheries within a broader, integrative ecosystem management and stewardship framework if our fisheries are to avoid unsustainable exploitation and maintain their productivity and resilience.

Reform of fisheries legislation, such as the recent Common Fisheries Policy reform, and increased efforts to source sustainable seafood are important steps towards more sustainable fisheries. Yet, the public must be engaged in these broad efforts. As a society we must embark on a more open and transparent process as to how we manage and use these public goods -- marine fisheries -- through a private-public fisheries governance system.

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August 5th 2014

Dr. Giles Wiggs
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Dear Dr. Wiggs,

I write to you regarding the doctoral thesis of Ms Alexis T. Gutierrez entitled "The Sustainable Seafood Movement -- Bringing Together Supply, Demand and Governance of Capture Fisheries in the US and UK to Achieve Sustainability." I co-authored her paper entitled "The Sustainable Seafood Movement's Influence on U.S. and UK Seafood Supply." Alexis conducted the semi-structured interviews, literature review and prepared the first draft of this paper. Based on my professional and scientific experience, I offered comments on the structure and content on the paper.

Please let me know if you have any questions or concerns.

A handwritten signature in black ink, appearing to read "S Morgan".

Sincerely,

Sian Morgan, PhD
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20 February 2014

Dear Dr. Wiggs,

I write to you regarding the doctoral thesis of Ms Alexis T. Gutierrez entitled "The Sustainable Seafood Movement -- Bringing Together Supply, Demand and Governance of Capture Fisheries in the US and UK to Achieve Sustainability." As Alexis' supervisor, I oversaw the development of her doctorate and co-authored her first paper entitled "Where do Consumers Fit in the Sustainable Seafood Movement?" My contribution to this paper included suggesting to Alexis that a cultural model would be a good frame of analysis of this subject matter. Further, I provided significant comments on the qualitative sections of this paper. Alexis carried out the consumer interviews and surveys, analyzed all the quantitative data, and drafted the paper. Finally, as her supervisor I reviewed and provided substantive feedback on her introduction, all four papers and her conclusion.

Please let me know if you have any comments or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read 'TF Thornton', written over a horizontal line.

Thomas F. Thornton, Ph.D.
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