The Origins and Growth of Social and Environmental Certification Programs in the Fisheries Sector

Graeme Auld
PhD Candidate
Yale University School of Forestry and Environmental Studies
graeme.auld@yale.edu

Prepared for the

11th Annual Conference of the International Society for New Institutional Economics

Reykjavik, Iceland
June 21-23, 2007

1. Introduction

Oceans and freshwater lakes, rivers and streams provide a wealth of food and other resources used by humankind. The diversity of resources is astounding and our efforts to extract and utilize them extensive. At the same time, our growing use of and demand for these resources have left many fish stocks over-exploited and even threatened the extinction of certain marine mammals. Social costs are also often high, with fishery communities unable to derive livelihoods from the marine environments that have supported them for decades and sometimes even centuries. Government efforts domestically, regionally and internationally have been the historical center of efforts at ameliorating these problems. Yet, recently, private social and environmental certification programs have emerged as an additional tool. Proponents of these initiatives herald them as a territorially unrestricted form of social steering that matches the global, supply-chain centered organization of market activities, and thus can address trans-boundary environmental and social problems. The approach is not, however, free of institutional limits. For one, though these programs require adherence to rules that must be confirmed through external audits (a feature separating them from “soft-law” initiatives), company participation is voluntary. Additionally, programs must choose the scope (what issues to address) and domain (which actors to regulate) in a given sector, and thus their institutional design creates new forms of boundaries; boundaries between those actors that can participate and those that are excluded, for instance.

This paper examines the development of social and environmental certification programs in the fisheries sector to untangle the factors influencing how choices of scope and domain are made, and the influences these decisions have on the subsequent

development of programs in a sector. It explores the connections between internal program features, external structural factors, interactions between programs, and agent strategies that work to condition how programs emerge and change over time. Built on work from economics, political science and sociology that examines the emergence and growth of institutional and organizational forms, it also draws insights from an inductive analysis of the global fishery sector.

The remainder of this paper proceeds in four parts. First, it outlines a theoretical perspective on the origins and growth of certification programs, outlining key aspects of their organizational form. Second, it provides background on the fisheries sector, including production and trade trends, and specifics on the structure of the value chain. Third, it covers the problems that exist with fisheries production both aquaculture and wild-capture and discusses the existing government and social movement efforts for resolving these problems. The fourth and final section examines the various certification programs that have emerged in the fisheries sector, seeking to draw inductively from the historical factors that have influenced how their organizational forms have developed through time and how all these processes influence the number and variety of programs that emerge in a given sector.

2. Theoretical background

The field of social and environmental certification programs has grown considerably since the inception of certain key models in the late 1980s. These programs, mostly variants of a model type termed Non-State Market Driven (NSMD) governance programs by Cashore (2002) and Bernstein and Cashore (2007), are initiatives seeking to harness market incentives to encourage behavioral change in certain economic actors. In

theory, they represent formalized governance arrangements for developing and promoting social and environmental standards that can provide concerned consumers with information about products made through environmentally and socially responsible processes.[1] They are voluntary to the extent that producers, traders, manufacturers and retailers may choose whether or not to participate. However, in many instances, consumer willingness-to-pay is not the only factor driving participation; pressure on key actors – mostly large, brand sensitive companies somewhere along a market's supply chain – coming from social or environmental non-governmental organizations serve to prime market interest in greater participation (Gulbrandsen 2006). In this manner, certification has become a business-to-business tool for mitigating exposure to bad public relations by bolstering a company's overall ethical and environmental profile. Programs of this nature have developed in many economic sectors, including forestry, agriculture, wild-caught fisheries and aquaculture, the marine aquarium trade, factory working conditions, and tourism.[2]

Although scholars have begun to explain the conditions and strategies that helped establish the 'certification' model in different sectors (Bartley 2003; Courville 2003; Cashore, Auld, and Newsom 2004; Fridell 2004), little work has examined the finer-grained formation of specific aspects of these programs, and how, when, and why they develop. The following list of general attributes of NSMD-like programs illustrates the

[1] They are distinct from labels of origin (like buy American) in that they include processes for developing and revising standards over time, whereas labels of origin are static (or the claim does not change).
[2] For forestry see Bartley (2003); Cashore, Auld, and Newsom (2004); Gereffi, Garcia-Johnson, and Sasser (2001); Lipschutz and Fogel (1992); and Sasser (2006). For agriculture see Guthman (2004) and Raynolds (2007). For fisheries see Gulbrandsen (2005) and Stokke (2004). For marine aquarium trade see Auld et al. (2006). For tourism see Honey (2000), and for factory working conditions see Barltey (2003; 2005). See also comparative paper on this panel.

commonalities, but also differences between existing programs. These are a key focus of the remainder of the paper's discussion.

NSMD-like programs generally comprise the following features:

A. They have some form of inspection and monitoring. Initially, this may be an internal process, but over time, it has usually become an independent, third party verification process typically conducted by auditors that comply with the programs' accreditation standards. However, this too is not always the case. Certain programs only work with a single certification body.

B. They have standards regulating social and/or environmental impacts of production processes, as well as tracking requirements for following products through to the end-consumer. The manner in which programs balance the scope of issues under their consideration, and the standards they are striving to achieve, varies. Programs also make different decisions about the domain of their activities, i.e., the group of economic actors in a supply chain that the program's rules target.[3] Some programs focus only on smallholders or some geographically defined region. Others seek to include any and all producers in a sector that can meet the program's standards.

C. They have governance structures and procedures for overseeing operations, including rules for membership, decision-making, setting and revising standards, accrediting auditors, and addressing and resolving disputes. The specifics of these rules vary by program; for instance, most programs have members, although who can be a member, what rights are given to members, and how the interests of different members are weighted does vary.

D. They have logos or labels that can be used on products sold to end-consumers. However, the type of logo, the number of logos, and the rules for logo use vary.

Based on this short list of attributes, it is apparent that there is a vast pool of potential-program designs. Thus, the questions that arise are why certain forms come to exist, how this happens, and whether any particular form eventually dominates? On a cursory level, these questions are similar to the questions examined by economists interested in understanding the competition between new, emerging technologies. One basic model of this process indicates there is an early phase when "invention and

[3] This distinction between scope and domain was first made by Cutler, Haufler, and Porter (1999)

innovation create several technological variants designed to meet some expected consumer demand (Unruh 2000).” In this phase technological variants compete for cost reductions and market share and all benefit from increasing returns to scale. However, certain technologies can become dominant. Either they out-compete other technologies, a situation predicted to happen when transaction costs are negligible, information moves freely, actors are behaviorally consistent, and sufficient variation in the technological alternatives exists (North 1990; Nelson and Winter 2002). Alternatively, dominance can be achieved when the increasing returns for one technology so vastly over-shadows those of others (Page 2006). Finally, sub-optimal technologies can achieve dominance when transaction costs are non-negligible (North 1990). In this case, a hard to reverse decision to pursue the sub-optimal technology early on, may prevent adoption of an optimal technology later. The classic example of this form of outcome is the QWERTY typeset, an ordering for keyboards that currently dominates, but that is less efficient (as measured by maximum words typed per minute) compared to alternatives (David 1985).

Further refinements of this argument indicate that there are always possibilities for breaking a dominant model’s monopoly, be it optimal or sub-optimal. For instance, early models such as Arthur’s (1989) did not consider complementarities between competing technologies or what occurs when they develop at different times (Islas 1997). It also did not consider strategic efforts to create new technologies; governments, for instance, often fund research into new innovation, giving any resulting technologies sufficient resources and time to develop increasing returns before expanding into the entire market (Cowan 1990; Kemp, Rip, and Schot 2001). Companies also invest in

research and development precisely because of opportunities to profit from new technologies (Garud and Karnoe 2001).

Of course, certification programs are not technologies. Technological competition involves coordination problems, while the development of certification programs for social and environmental problems (or externalities) involves problems of cooperation, or, in other words, they regulate the social domain (Bernstein and Cashore 2007).[4] With coordination problems, in theory producers will have an interest in creating some common set of standards for aspects of their production processes and products in order to smooth economic transactions and create common gains.[5] Distributional conflicts may arise over the equilibrium outcome since different producers are likely to gain relative to their competitors with the adoption of particular quality standards or technology (Knight 1995, 1992; Salter 1999). Yet, once a particular technology becomes sufficiently dominant, using it becomes rational due to the positive network externalities created by coordination (Katz and Shapiro 1986). With cooperation, in contrast, compliance is costly and hence incentives to free ride remain high. [6] Cooperative outcomes are certainly possible (Ostrom 2000, 1990), however they pose different challenges that we must keep in mind.

Furthermore, the problems certification programs are seeking to address are often contested and in flux. Thus, a certification program developed at Time 1 to address the then-dominant problem definition may find itself less qualified to address the problem

[4] See also Snidal (1985)
[5] In discussing international regulatory regimes, Young (1999, pg 27) explained how "rules pertaining to the use of sea lanes, airspace, or even the electromagnetic spectrum, for instance, are largely matters of coordination in the sense that no one has any serious incentive to cheat once the relevant 'rules of the road' are clearly defined and generally understood."
[6] As Young (1999, pg 87) explains, because of the incentive to cheat, these problems "are not only difficult to solve in the first instance but also require continual attention to be sure that individual parties do not succumb to the incentives to violate rules they have accepted at the outset."

definition at Time 2. Organizational inertia, the partial consequence of specific assets a program might generate while addressing the original problem definition, could restrict its ability to shift in the future (Mintzberg 1978). The actions of early programs may also be complementary to the development of later programs. That is, a pioneer program (like a pioneer species in an ecosystem) may alter the market, shifting consumer and societal expectations, and possibly generating a greater consumer demand for certified products. These shifts result in opportunities for later programs to establish and quickly grow. These factors of changing problem definitions, organizational inertia, and program complementarities work together to inhibit the emergence of a single dominant program.

The challenge facing programs therefore appears to be three-fold. First, for a program to become dominant, it needs to take advantage of high reversal costs, complementarities, and network externalities to give actors reasons to support it over other alternatives. Second, and importantly, it needs to find ways in which to prevent exit and free riding, the key challenges that distinguish institution building for cooperative problems from coordination problems. Finally, these efforts may be futile if changes in the problem definition make adaptation too costly or at odds with the mission or routinized practices of the organization. It is this final point that serves as the theoretical focus of this paper. The description of the fisheries sector will serve to inductively develop more concrete ideas of what factors influence the extent to which changes in problem definitions are likely and what results this has for the development of certification programs.

3. The Fisheries Sector

3.1 Processing and Production

Fisheries target many different parts of the world's oceans and freshwater bodies, habitats including lakes, coral reefs, mangroves, estuaries, the ocean floor of continental shelves (the benethic zone), and the open oceans (the pelagic zone). Across these different habitats, hundreds of species are captured and tended, from which thousands of seafood products are produced. In 2004, world fisheries production in all waters from both aquaculture and wild-capture totaled around 140 million tonnes. Of this, 34.8 million tonnes (25%) was used for non-food products such as fish-oils and meals. The other 105.6 million tonnes (75%) went for human consumption, with approximately half of this (51 million tonnes) undergoing some form of processing and the other half (54.6 million tonnes) being sold in whole-fish form (Food and Agricultural Organization 2007).

Wild-capture fisheries totaled 95 million tonnes in 2004, with 86 million tonnes captured in open-oceans and the remaining 9 million coming from inland waters. Production of capture fisheries has risen dramatically since the 1950s when around 16 million tonnes were extracted (Figure 1).[7] By the end of the 1980s, this reached around 80 million tonnes, after which production has leveled off. The capture of pelagic species (e.g., herrings, sardines, anchovies, tunas, billfishes, and bonitos) and demersal species, those living on the ocean floor (e.g., cods, hakes, haddocks, flounders, halibuts, soles, and sharks), comprise the lion's share of ocean production. In the 1950s, the two accounted for approximately 80% of total capture; by 2004 this had dropped only slightly to 72%.[8] A regional breakdown also illustrates the increased pelagic-fishing intensity of Asia

[7] This total includes capture statistics for Cephalopods, Crustaceans, Marine Demersal, Freshwater Diadromous, Pelagic Marine, and Marine Species Other.

[8] The fluctuations in pelagic capture evident in figure 1 come from the South American anchoveta fisheries (Figure 2): the Peruvian anchoveta is highly sensitive to ocean conditions influenced by El Nino effects in the Southeast Pacific (Food and Agricultural Organization 2007, pg. 8).

relative to North America. Asia's growing takes are evident across species, and especially with aquaculture.

Around the world, production from aquaculture has risen markedly for the past three decades, rising from 2.7% of total fisheries production in 1970 to 32.4% in 2004 (Food and Agricultural Organization 2007) (Figure 3). The largest growth took place in Asia, and specifically China. For Molluscs (e.g., clams, abalones, mussels, oysters, scallops, among others) the growth of aquaculture has been even more pronounced; indeed, between 1981 and 1997, China sustained a 13-fold increase in per capita consumption of Molluscs (Delgado et al. 2003). In Asia, over 12 million tonnes were produced in 2005, in marine waters, up from 73 thousand tonnes in 1950, around 560 thousand tonnes in 1970, and 2.8 million tonnes in 1990. [9]

3.2 Geography of trade

In 2004, over one third of world fish production measured by weight was traded internationally (Food and Agricultural Organization 2007). A regional breakdown, however, elucidates how most production is consumed regionally (Appendix 1). This is particularly the case when Mollusces are excluded. In only a few cases do export quantities exceed 20% of a region's total production; even more rare are proportions higher than 30%.[10] Overall, import and export quantities, as a proportion of total annual production values are highest in Europe, although even here, they rarely exceed 30%. Export proportions have steadily grown in Europe since the 1960s, with the greatest

[9] http://www.fao.org

[10] For instance, Europe exported an average of 25% of its Freshwater Diadromous species production in the 1990s and Oceania exported 22% of its total crustacean production.

increase in Freshwater Diadromous species: only 10% of production was exported in 1960, whereas nearly 35% was in 2000.

With imports, Europe again has the highest level relative to apparent consumption (production minus exports). Imports closely match exports, indicating that much of the import-export activity is occurring within Europe.[11] At the other extreme, in Asia, imports comprise no more than one percent of apparent consumption for all species groups. Likewise, the proportion of imports is also limited in South America across all species and in Africa, with the exception of other Marine Fish species (FAO's category for otherwise unclassified species). North America is more intermediate, exhibiting growth in imports but not yet to the level seen in Europe.

Even though exports are small in size relative to production tonnages, they represent extremely significant levels for developing countries in terms of value. In 2004, world trade in fishery products exceeded US $70 billion, and in developing countries the value of exports has grown markedly, reaching over US $20 billion by 2004, a quintupling since the early 1980s (Food and Agricultural Organization 2007).[12]

3.3 The Supply Chain

The diversity of species fished around the world makes it hard to identify a single supply chain.[13] Nonetheless, there are certain points of concentration and fragmentation. For starters, production is highly diverse and involves many millions of people around

[11] For instance, Diadromous Fish exports and imports both grew from around 10% in 1960 to over 30% in 2000.

[12] These increases can partly be attributed to trade liberalization, yet many barriers remain, including escalating tariffs punishing exports of more processed products and an increasing number of food safety and quality requirements (Ahmed 2005).

[13] Unlike much of the literature on global value chains that deals with supply chains of a smaller set of products, for instance, apparel (Gereffi and Korzeniewicz 1994), or a single product, for instance coffee (Ponte 2004; Talbot 2004), fisheries involves myriad complex interactions among public and private actors that do not neatly fit a categorization as a demand or producer driven chain (Wilkinson 2006).

the world. In 2004, 41 million people around the world worked as fishers or fish farmers (Food and Agricultural Organization 2007). The majority of them work in aquaculture, and much akin to other industrial sectors, most of these workers and fishers are small-scale operators, as many as 90% in coastal fisheries. Additionally, they receive very little pay: close to 6 million small-scale fishers are estimated to earn less than a dollar per day (Kura et al. 2004). The international fisheries fleet is also vast. In 2004, the FAO estimated it at approximately 4 million strong (Food and Agricultural Organization 2007).

Within processing and retail sectors, the supply chains of various species narrow, but again, this pattern varies geographically. In the UK, for instance, supermarkets serve as the most concentrated point in the chain. Figures for 2005 indicate that over 85% of retail sales of chilled and frozen seafood occurred through supermarkets. Combined, Tesco and Sainsbury account for over 40% and 30% of the UK chilled and frozen seafood market (Greenpeace 2005). Retail markets in other developed world countries follow similar patterns; however, this again does not capture the large quantities of seafood not consumed in these markets.

Consumption patterns have indeed shifted markedly over the past few decades. In 2004, excluding China, apparent per capita consumption of fish products was 13.5 kilograms; including China, the figure jumps to 16.6 kilograms (Food and Agricultural Organization 2007). Around the world, fish provided around 2.6 billion people with approximately 20% of their annual animal protein in take (Food and Agricultural Organization 2007), and demand continues to grow, mostly driven by developing countries. Whereas in 1973, developed countries accounted for 55% of the global fish

consumption, by 1997, this had fallen to 31%. China's contribution, in contrast, had grown to 36% and other developing countries to 33% (Delgado et al. 2003). The pattern of increasing consumption is not however uniform: in Latin America and Sub-Saharan Africa it fell, whereas in Southeast Asia, India, and China, it rose (Delgado et al. 2003).

This general discussion is indicative of the diversity of fisheries supply chains that are connected but partly separable. Retail supermarkets tie parts of the sector together; a food processing company may sell both canned tuna and frozen white fish to a single supermarket; and extraction is more unified and organized for products such as farmed salmon. Thus, there are still opportunities to separate out the different aspects of the sector, addressing specific social and environmental problems attributed to the production of individual products. In other words, this means certification programs could in theory choose to be broad, covering the entire sector, or focus narrowly on the tending and/or extraction of one species. Explaining why they have been made in the manner they have has importance for understanding the development of new certification programs.

4. Governance in the fisheries sector

4.1 The problems of wild capture and fish farming

The social and environmental problems connected to fishing are numerous. Over fishing is a main culprit (Delgado et al. 2003) and is largely due to the mismatch between our fishing infrastructure – both in terms of our overall fishing capacity (Evans 2001) and our sophisticated methods for locating, capturing, processing, storing, and transporting (Caddy and Sejio 2005) – and governments' capacities and willingness to regulate and manage these activities. In developing countries, for instance, a strong economic imperative can work counter to effective regulation, as licensing fees charged of foreign

fleets given access to a country's Exclusive Economic Zone (EEZ) may provide needed foreign currency exchange (Caddy and Sejio 2005). Even in developed countries, where government scientists' and managers' tract and monitor fishing effort in order to regulate takes to within sustainable levels, stock depletion and even crashes have occurred (Finlayson 2004).[14]

Across the board, information on stocks is unsettling. The most recent FAO state of the world fisheries and aquaculture report, explains how "most of the stocks of the top ten species, which account in total for about 30 percent of the world capture fishers production in terms of quantity, are fully exploited or overexploited and therefore cannot be expected to produce major increases in catches (Food and Agricultural Organization 2007, pg 31)." For all fish stocks that have assessment data, the picture is also dire: upwards of 75% of these are "fully exploited or overexploited (or depleted and recovering from depletion) (Food and Agricultural Organization 2007, pg.33)."

The impacts of over-exploitation extend beyond direct effects on individual fish stocks. Fishing for a target species often takes significant quantities of non-target species, or by-catch.[15] Though some is sold, in 2004 by-catch discard was estimated at 20 million tonnes, nearly one fourth of the total global production. Habitats destroyed by dragging nets along the ocean bottom further exacerbate the ecosystem-wide effects of heavy fishing efforts.

Growth of aquaculture production has raised new concerns. Despite centuries of aquaculture practice in parts of the world, from the 1960s, and particularly in the 1980s, the intensity of production rose markedly (Quarto, Cissna, and Taylor 1996; Stonich and

[14] Caddy and Sejio (2005) suggest crashes in these waters where scientific understandings are most extensive are "[the] most disturbing evidence of the non-sustainability of marine fisheries."
[15] Dolphins caught in tuna nets and turtles in shrimp nets are two well-known examples (DeSombre 2000).

Bailey 2000). For several reasons, the environmental and social impacts of the intensification were worrying. First, habitat destruction raised concerns since wetland forests, such as mangroves, were regularly cleared and replaced by aquaculture pens (Quarto, Cissna, and Taylor 1996). Shrimp farms, for instance, were associated with the destruction of coastal mangrove forests. Salmon farms also created negative spill over effects through higher fecal-matter concentrations in the vicinity of coastal pens.

Second, although aquaculture can offset pressure on wild stocks, this does not hold for all species. With herbivores or filter feeders, Naylor et al (2000) explain, the contribution of aquaculture towards total supply can be positive. Conversely, when carnivores are farmed, such as Salmon, fishmeal from wild-capture fisheries is needed to sustain the farmed species. Historically, it has taken as much as 2 to 5 kilograms of fishmeal protein to create a single kilogram of protein from the farmed fish (Naylor et al. 2000). Thus, farming carnivores has actually contributed to higher intensities of fishing effort aimed at lower trophic level, wild-fish stocks.

Thirdly, due to high stocking densities, intensive production can facilitate population rises in parasites, diseases, and other pathogens,[16] and also creates concerns about escapes. Escaped farmed salmon, for instance, can compete with wild salmon, threatening the stability of wild populations.[17] This is particularly concerning when non-native species of salmon are used for farming. Thus, overall, both fisheries and

[16] Although the population-level effects remain to be thoroughly examined (Hilborn 2006) and the issue remains under debate (Krkosek et al. 2006; Brooks and Stucchi 2006), a study by Krkosek, Lewis, and Volpe (Krkosek, Lewis, and Volpe 2005) found increased sea-lice infection in juvenile chum and pink salmon migrating past aquaculture pens in a British Columbia coastal inlet. The controversy, however, has not waited for the scientists to agree either way and hence a great deal of concern and debate surrounds the spread of salmon farming.

[17] On the other hand, it is important to note that "wild" salmon is somewhat a misnomer in situations where spawning streams are stocked with hatchery-bred fry. In this case, wild salmon can share the same genetic make-up of their farmed counterparts and hence wild salmon fisheries are comparable to ranching.

aquaculture, although generating massive benefits for human societies, are the cause of many environmental problems.

Before, turning to how certification initiatives seek to remedy these problems, the next section briefly sketches government and social movement activities designed to also address fishery problems.

4.2 Government activities addressing fisheries problems

Recognition of the challenges of open-seas, fisheries management has existed for many decades. Since the end of World War Two, governments have sought cooperation over open-seas management. Jurisdiction over a 200 nautical mile Exclusive Economic Zone (EEZ) bordering coast lines was an initial step (deFontaubert 1995). This was built on by several agreements in the early 1990s. In May of 1992, the Mexican government and the FAO held a conference in Cancun addressing "responsible fishing" out of which emerged a refined understanding of what the term meant and the obligations it placed on states. Additionally, the parties to the declaration also pressed the FAO to begin developing a code of conduct for responsible fisheries.[18] Chapter 17 of the Rio Earth Summit's Agenda 21 offered further clarity to the fisheries policy agenda for the coming decades. The chapter underlined a need for greater cooperation around high-seas fisheries regulation and better management of coastal regions under national jurisdiction, including greater protection for critical marine ecosystems (coral reefs; estuaries; coastal wetlands, including mangroves; seagrass beds; and other areas critical for spawning or nursing).[19] Though it stopped short of resolving the ongoing challenge of straddling and highly migratory stocks, the parties did agreed that a Post-Rio conference should be

[18] http://www.fao.org/DOCREP/003/V5321E/V5321E11.htm#ch9.5
[19] http://www.fao.org/DOCREP/003/V5321E/V5321E11.htm#ch9.5

dedicated to these issues. Talks began soon after and led to the signing of the 1995 UN Fish Stocks Agreement (deFontaubert 1995). In the same year, the FAO Code of Conduct for Responsible Fisheries Practices was released, having been approved by a working group of over 100 coastal states (Caddy 1999) (see appendix 2).[20,21]

The improvements in the regulatory framework are widely recognized, yet because it is so extensive, implementation has been taxing and hence scrutiny of the sector has not waned.[22] This government failure, in deed, served as an important motivator for the initiation of certification programs.

Government regulations have not been useless as a tool for those seeking global change in fisheries practices, however. The next section discusses some examples of US regulations that have been used by activists to seek broader changes in fisheries practices. Much like the structure of the extant international regulatory framework, these efforts have influenced the subsequent development of social and environmental certification programs in the fisheries sector.

4.3 Social movement activities addressing fisheries problems

[20] The concurrent development of these instruments also served a useful purpose since the Code actually included provisions from the Fish Stocks Agreement. There was in fact a great deal of harmony in wording and phraseology across these agreements (Caddy 1999). Consequently, while it took until November 2001 for the Fish Stocks Agreement to come into force (Cochrane and Doulman 2005), many of its provisions were inserted in domestic laws earlier through voluntary adoption of the FAO Code (Richards and Maguire 1998).

[21] On the periphery, but still important to marine and fisheries regulation, the 1973 Convention on International Trade in Endangered Species of Fauna and Flora (CITES) and the 1992 Convention on Biological Diversity (CBD) offered additional provisions increasingly relevant to fisheries management and production. These agreements will gain importance as ocean stocks further dwindled (Kura et al. 2004). Already a few commercially significant species are on the CITES Appendix II, meaning that only trade not reducing the species survival is permitted (Caddy 1999; Cochrane and Doulman 2005).

[22] As Cochrane and Doulman (2005) later explain: "countries are encountering substantive problems in responding to the ambitious and far-reaching intentions of these international instruments, and especially the post-UNCED instruments. The general result appears to be that in marine capture fisheries, global policy and the good intentions reflected in the instruments are outstripping implementation by a wide margin."

Two sets of early social movement activities were key influences over the later development of certification programs in the fisheries sector. The 1980s witnessed a shift towards a greater interest in sanctioning corporations for social and environmental ills by launching domestic or international boycotts. Though boycotts had a long history even in the 1980s (Friedman 1999), the period saw much greater activity,[23] including certain high-profile boycotts such as the one against tuna fishers for dolphin mortality and shrimp fishers for turtle mortality.

Three facets of the campaigns and consumer concern were significant. First, they led to the promotion of eco-labels that provided information on the process by which the product was made (i.e., a fishing method that would not kill Dolphins or sea turtles). In this sense, they began to build consumer awareness in environmental considerations of seafood consumption.

Second, the use of the courts illustrated the venue shopping tactics of US activists,[24] and how, in the case of certain fisheries, domestic legislation was actually internationalized reasonably successfully, even in spite of a WTO ruling against the US law (DeSombre 2000). This is important since it gave certain groups an alternative strategy. They could use existing government rules to press for behavior changes, rather than turning their attention to a new instrument, in this case a privately run certification program.

---

[23] For instance, in 1984, in the US, Todd Putnam, a Seattle resident, began publishing a biannual newsletter – the National Boycott News – to track and disseminate information about organized boycotts (Conklin 1991).

[24] The legal institutions in the US, and particularly the court system married with the 'action forcing' form of legislation, meant court challenges have and remain a central arrow in the quiver of environmental activists and campaigners. Additionally, as is documented by DeSombre (2000) and Vogel (1995), US environmental legislation passed in the 1970s became a central leverage for Bootlegger-Baptist coalitions seeking to regulate the activities of foreign fishing interests, two classical examples being turtle mortality associated with shrimp trawling and Dolphin mortality from tuna fishing.

Finally, and most importantly when combined with the availability and success of US court-action, the single species approach taken by the campaign had a lasting effect on certification developments that would come later in the 1990s. Attention to individual species, such as tuna and shrimp, seemed to slow the development of a sector-wide approach, akin to something that would later develop under the guidance of the WWF, a point that will be discussed further below.[25]

In addition to the inertia effects of the single-species approach, a second approach developed that itself filled part of the space a sector-wide certification program might have occupied. Groups began developing "buyer guides" that identified, through some ranking systems, which fisheries were okay (green light), which were intermediate (yellow light) and which were not all right (red light) (Audubon Society 1998). Different organizations issued various ranking lists, starting in 1998 in the US (Roheim and Sutinen 2006) and then shortly after in Europe.[26] In theory a buyer guide and certification approach can be complementary,[27] and as will be discussed below, this has proved true. At the same time, they also serve as an alternative approach for evaluating behavior of companies and fisheries, giving consumers information about their purchases, and, in this

[25] Further single-species campaigns occurred late into the 1990s, with a 1998 campaign led by SeaWeb titled "Give Swordfish a Break" and a 2002 campaign led by the National Environmental Trust titled "Take a Pass on Chilean Sea Bass" (Roheim and Sutinen 2006).

[26] Personal communication, Official from the Marine Conservation Society, May 2007. Groups that have developed and disseminated such guides include the Monterey Bay Aquarium, Blue Ocean Institute, and Environmental Defense in the US, and the Marine Conservation Society and North Sea Foundation in Europe (Roheim and Sutinen 2006).

[27] Later commentary on the seafood ranking approach viewed it as a complement to the development of certification under the auspice of the MSC. Developers of the Blue Ocean Institute ranking procedure, offered the following as a rationale for why certification and ranking are not competitors: "A difference between certifications and ranking systems is that consumers see the results of certifications as an on-pack label for only those products that have passed evaluation, whereas ranking systems arm consumers with the information they need to choose among an array of products in the marketplace. We see these two approaches as different and complementary (Brownstein, Lee, and Safina 2003)."

sense, they do more than a labeling program can. The fact that their scope is broad will be important for how they interact with certification initiatives in the longer term.

Although not exhaustive, this discussion of the consumer-oriented campaigns in the fisheries sector help to establish what the pool of alternative approaches looked like when certification took form. They also give an indication of how differences between Europe and the US proved important for how certification initiatives took form.

5. The emergence and growth of fisheries certification programs

5.1 The creation of organic farmed fishing

Though dolphin-safe tuna was arguably the best known labeling initiative of the early 1990s (Broathen 1999), in this period other initiatives, across sectors, formed as means to communicate information to consumers about the social and environmental implications of their purchases. Within fisheries, organic certification appeared well tooled to expand into the fisheries labeling; yet its history and commitment to a particular idea of organic practices ostensibly limited this potential.

With origins reaching back to the early 1900s, the organic movement had greatly formalized and, by the early 1990s, would soon include all the needed parts of a global environmental certification program. In 1990, at the International Federation of Organic Agriculture Movements' (IFOAM) General Assembly, the organization's membership approved the creation of a full-fledged accreditation program (International Organic Accreditation Service 2006). The new program, they hoped, would help promote consistency among the many organic certifiers (i.e., the Soil Association, Naturland, KRAV, *inter alia*) that were in operation at the time. Within two years, IFOAM's accreditation committee, with input from the program evaluation committee, developed

an accreditation program, which received unanimous endorsement from the membership in 1992 (International Organic Accreditation Service 2006; Commins 2004). Over the coming years, existing organic certifiers began to accredit with the new IFOAM program.[28] Even still, this move did not immediately unify the movement. With governments becoming involved in standard setting and label-use regulation, organics became increasingly complicated and fragmented through this period, especially for farmers seeking access to more than one market (for instance, the EU and the US).

Organics were also expanding into aquaculture. Starting in 1989, the Soil Association, a UK-based organic certification organization that had first established in the 1940s and had been conducting organic certifications since the 1970s (Soil Association 2006), began work on a draft standard for certified organic farmed salmon and trout.[29] They had been approached by certain smaller salmon farming operations in Scotland that were eager to have their practices recognized in the market place as distinct from the intensive, industrial practices of their larger competitors (Soil Association 2004).[30] Naturland, a German-based certifier, soon followed; it released standards for organic pond farming in 1995,[31] and a year later certified a salmon farm off the west coast of Ireland. [32] Interest had also developed outside Europe: Bio-Gro, a New Zealand based organic certification organization, certified a salmon farm in 1994, the output of which was targeted for the European market (Scialabba and Hattam 2002). By 1996, as a consequence of this growing interest, the Soil Association re-initiated its standards

[28] In July 1993, KRAV a Swedish organic certifier sought accreditation and by March 1994 seven more certifiers were under review; by December the first organic accreditation contracts were signed (International Organic Accreditation Service 2006).
[29] http://www.fao.org/DOCREP/005/Y4137E/y4137e06.htm#2
[30] Personal communication, Soil Association official, June 4, 2007
[31] http://www.naturland.de/englisch/frame_defs/framedef.html
[32] http://www.naturland.de/englisch/frame_defs/framedef.html

drafting process, building on its earlier work, and eventually released an "interim" standard in 1998 (Soil Association 2004). A year later, Naturland released shrimp-farming standards, opening its services to an increasing number of developing countries.[33]

While the Soil Association, Naturland, and a select few other organic certifiers were working on aquaculture standards and offering initial certifications, IFOAM continued refining its accreditation service. In 1997, it finally created the International Organic Accreditation Service (IOAS) as an independent company and gave it responsibility for IFOAM accreditation services (International Organic Accreditation Service 2006). Recognizing a need to harmonize the core principles of organic aquaculture practice, IFOAM began drafting a "Basic Standard for Organic Aquaculture Production" in 1998 (Scialabba and Hattam 2002). An IFOAM label, stating "IFOAM Accredited" was released in 1999 and was to be used concurrently with the accredited certifier's own label (Commins 2003). Only a year later, the IFOAM "Basic Standards for Organic Aquaculture Production" were accepted by the membership at the General Assembly in 2000 as a draft standard for further refinement (Scialabba and Hattam 2002).

The consequence of all these developments was the introduction of organic seafood to a number of markets. In 1999, the first Naturland certified organic mussels reached the market.[34] With salmon Naturland's certification of an Irish salmon farm and with the earlier New Zealand organic salmon certifications, both mentioned above, Scottish producers were spurred to follow. By 1998, the Soil Association was involved and had endorsed salmon farms under its "interim" standard allowing supermarkets to

[33] http://www.naturland.de/englisch/frame_defs/framedef.html and (Scialabba and Hattam 2002)
[34] http://www.naturland.de/englisch/frame_defs/framedef.html

begin stocking organic salmon products (Aberdeen Press and Journal 1998; Binnie 1998). Yet, many felt applying organic principles to farm fishing was highly problematic, riddled with inconsistencies when compared with the original intention of organic agriculture. Officials from the Soil Association recognized the interest in organics but also the extreme care with which to proceed; as one official was quoted saying: "We were treading on very sensitive ground but there was a lot of demand from consumers for a better quality product produced in a better way (Harris 1999)."

Debate erupted. Claims were made that even the Soil Association's standard was not truly organic given that it lacked endorsement from the government. And more generally, activists questioned whether fish farming should ever be considered organic. A campaigner from the Friends of the Earth UK remarked: "Cramming a migratory species, cooped up in cages, fed on a high-energy diet of fast-diminishing resources is hardly in tune with nature (Edwards 2000)."

Across the Atlantic, similar debates were being waged around how the US organic labeling laws should handle fisheries. However, here the question was whether wild-capture fisheries could be considered organic. Conceivably, organic standards could be applied to wild-capture fisheries. Indeed, this is what the Alaskan salmon fishers pursued at the end of the 1990s, in part because, as just noted, organic farmed salmon was being sold in UK supermarkets (Harris 1999; Kennedy 1999). The Alaskan wild-capture fisheries wanted their own mark of environmental quality. They pressed the US National Organic Standards Board to accept wild-capture as at least in theory, certifiable under organic standards. In 1999, two pilot projects were established in Alaska to make this assessment (Joling 1999). In the end, the decision was against the Alaskan producers.

Without the ability to ensure that no prohibited substances were ingested during the ocean life of the salmon, the US NOSB concluded wild-caught salmon could not be organic (Wessells et al. 2001).

These two examples, illustrate how organics were not able, for different reasons, to fit with the new set of problems that groups were seeking to resolve. In the case of salmon farming in Scotland, organic principles were felt at odds with fish farming practices; they just were not compatible according to certain groups. With the Alaskan case, wild-capture fishers sought the label to guarantee their market. Yet, the focus of the US organic standard on prohibited substances made organic wild-caught salmon unacceptable.[35]

In separate ways, these developments meant that there was a great deal more that a new eco-label fisheries program might accomplish. The market interest was there – organics had begun to generate interest in an "environmentally friendly" label for fish. A group would only need to develop a credible program to fill the demand. And although, as discussed above, government action on fisheries problems gained momentum during this period, there was a perceived shortfall with implementing the agreements and rules that had been delineated.

5.2 Expanding beyond organics: wild capture fisheries

These conditions provided a ripe environment for creating a comprehensive labeling initiatives, more aligned with the sustainable development paradigm of the post-

[35] "Kate Troll, fisheries specialist for the state Department of Commerce, said the law laid out four main criteria for certification: a designated harvest area, a management history, management that protects the environment and encourages sustained yields, and a demonstration that the producer added no prohibited substances (Joling 1999)."

Brundtland report era. WWF and Unilever seized the opportunity. With the launch of its "Endangered Seas Campaign" in 1995, the WWF began grappling with the complex problems of marine protection and appropriate fisheries management.[36] One aspect of the WWF strategy, began to take form in 1996, when the organization initiated a partnership with Unilever (a large multinational seafood company) to create an eco-label for responsible fisheries management (Hernes and Mikalsen 2002; ANP English News Bulletin 1996). The partners' motivations were clear: they wanted to adapt the forestry sector model – the Forest Stewardship Council – and apply it to the fisheries case. As Antony Burgmans, the Director of Unilever's Frozen Fish and Ice Cream division (later to become Unilever's CEO) wrote about this period: "I and my colleagues were impressed with the work that the international conservation organization WWF had done to establish the now independent Forest Stewardship Council (FSC)… Our initial discussions with WWF confirmed that we had different motives, but a common purpose: the need to assure the long-term sustainability of global fish stocks and the marine ecosystem (Burgmans 2003)."[37]

To proceed, the partners sought advice on how to mimic the FSC; they commissioned Coopers & Lybrand to study the FSC's governance procedures (Sutton and Whitfield 1996). This included sending the team to the FSC's first General Assembly

[36] In striking parallel to forestry, the WWF fit the idea of a fisheries eco-labeling initiative into a three-pronged strategy to improving the conditions of the world's oceans. First, like the organization's global 200 eco-regions 'hot spots' the WWF delineated a parallel set of marine hot spots. Second, as in forestry with its promotion of protected areas and FSC certification, the WWF began promoting marine protected areas along with fisheries certification (Flanders 1998).

[37] They formalized these ideas with a formal statement of intent that explained: "The MSC will be modeled on the successful Forest Stewardship Council (FSC), launched by WWF, other conservation groups and timber traders in 1993 to promote a market-led solution towards more sustainable forestry practices around the world," and that both WWF and Unilever would "contribute matching funds into an extensive scoping exercise to explore how the FSC model [could] be adapted to meet the specific sustainability needs of global marine fisheries (Sutton 1996)."

in 1996 (Synnott 2005), in order to "learn from their successes and mistakes (Sutton and Whitfield 1996)." One lesson they took from the analysis was that a membership-based organization would constrain any fisheries certification program, leaving it unable to quickly adapt and act (Auld et al. 2007). The idea was to create a streamline organization, with little bureaucracy, but highly competent, to operate strategically early on to get the program running. Hence, the eventual Marine Stewardship Council (MSC), was officially launched as an independent non-profit organization in February 1997 without specific provisions for membership (Sutton 1998).[38] Instead, in addition to a Board and Chair serving as public trustees for the organization, the MSC would be run by a Secretariat that coordinated the activities of a Standards Council, Advisory Board, and National Working Groups. The Advisory Board was the closest thing to membership body; according to the MSC's original website, it "[was] open to any individual with an interest in fisheries and their certification irrespective of their own background (Marine Stewardship Council 1999b)." Yet members would only serve an advisory role, rather than holding voting rights, as was the case in the FSC.[39]

Another aspect of its early work was creating a standard for assessing appropriate fisheries management. With this aim, the MSC began a two-year consultative process that worked off standards detailed in the FAO's Code of Conduct for Responsible Fisheries, the UN Fish Stocks Agreement and the Principles for the Conversation of Wild Living Resources (Mangel et al. 1996; OECD 2005; Sutton 1996).[40] This began with a meeting in Bagshot, England in September 1996 where 20 experts were invited to participate in

[38] http://www.msc.org/html/content_470.htm
[39] National working groups were also set up for the purpose of outreach and awareness-building as opposed to standards development, as was the case with the FSC.
[40] http://www.msc.org/html/content_470.htm

the first drafting process (OECD 2005). From there, eight workshops were held around the world, including in Massachusetts, British Columbia, Germany, South Africa, Australia, New Zealand, Scotland, and Greece (Constance and Bonanno 1999). International experts were invited to a final workshop held in Washington, D.C., in December 1997 to debate a final draft of the Principles and Criteria, a document that was then presented to the MSC Board and Chair (OECD 2005). Over the next year, further workshops occurred in Ecuador, Chile, Argentina, and Peru (Marine Stewardship Council 1999a) that refined the Principles and Criteria and were partly an effort to respond to criticisms of the MSC's limited understanding of or attention to the issues of developing-world fisheries (Sutton 1998). Nevertheless, these issues remained a concern.

In spite of its accomplishments in these early years, the organization remained controversial. A central lightening rod was how to grapple with the social side of fisheries management, particularly in the developing world. Given the many millions of small-scale fishers and their lack of management capacity, many questions were raised about whether certification served their interests. A series of debates occurred in *Samudra,* the magazine of the International Collective in Support of Fishworkers (ICSF), focusing on the development of the MSC and what it meant for fishers around the world, but particularly in the developing world. One commentator in this debate explained the challenge facing the MSC: "As the process of developing the MSC Principles and Criteria advances, boundaries will need to be drawn around what the MSC includes and what it excludes. This may mean that environmental and technical factors will be the main determining criteria for accreditation, while social factors may be pushed into the background (O'Riordan 1997)." In essence, the developers had to determine the scope

and domain of the program. What issues did they want to address and what fishery operations would be able to apply?

Even the MSC developers realized this dynamic both in terms of the standards and the governance of the organization. For instance, with governance, Michael Sutton (1998), an employee of WWF centrally involved in the creation of the MSC, explained to readers of *Samudra,* that although they had originally been advised to stick with a non-member organizational format, the issue of governance was still under debate, having been raised frequently at regional workshops around the world. This comment foreshadowed an ongoing process of adaptation and reformulation. The first governance review was due for completion in December 2001 and others followed (Marine Stewardship Council 2001c).[41]

With standards, the MSC chose to keep them streamline, excluding more direct attention to social or development issues and not addressing the issue of farm fishing. They made these decisions though conscious of the significance of both for the sustainability of fish stocks (Turcsik 1997). The Principles and Criteria were general and would be made specific in the context of a single fishery, a task given to the individual certification bodies accredited by the MSC.

In summary, by the end of 1999, the MSC comprised all the features of an international certification program. Although debate remained over governance and early fisheries certification would prove controversial, the program was poised to represent a potential leader in the eco-labeling field. Indeed, in spite of the internal challenges, interest in the program was immediate and sizable. By 1997, in the UK, Sainsbury and Tesco, two major supermarket chains, indicated they would seek MSC-labeled seafood

[41] http://web.archive.org/web/20001002235224/http://www.msc.org/structure.html

when they became available (Boulton 1997); Unilever itself committed to selling only MSC labeled products by 2005 (Hill 1997). Nevertheless, the time taken to formally organize, the controversies surrounding the program, and its decision to focus on wild-capture rather than also include fish farming, left open a door for other initiatives to form. Some did, of which a few were direct competitors with the MSC; others were more complements. These are discussed below.

5.3 Other initiatives: industry, government and environmental organizations

The split between the MSC's efforts on wild-capture and organic's attention to farmed fishing, plus the continued campaigning efforts of US-based organizations on shrimp farming and other single-species campaigns, served as an important background to the continued bifurcation of fisheries certification initiatives. Nevertheless, the fragmentation of organic certification both in terms of variation in government requirements and the individual certifiers, meant organics was still a possible player in the emerging interest in wild-capture certification. This interest developed later, after other players had moved.

There were also differences between Europe and North America, indicative of the separate industries operating in these regions. Certain initiatives were more clearly responding to the MSC, while others were vying with the burgeoning organic farmed fish standards and labels and the campaigns launched by NGOs against single species, such as shrimp and salmon.

In Europe certain governments took a central role in reacting to the MSC. Around the time the Unilever-WWF partnership was announced, in August 1996 the Nordic

Council of Ministers created a Nordic project group charged with assessing standards for sustainable fish production. [42] The Nordic Council then became a central proponent of an FAO-led eco-labeling scheme (O'Riordan 1998), owing to a perception that MSC was undermining countries' regulatory jurisdiction over marine resources (Stokke 2004). It vocalized this position at an October 1998 FAO technical consultation convened to explore the creation of "Non-discriminatory Technical Guidelines for Ecolabelling of Products from Marine Capture Fisheries."[43] Unfortunately for the Nordic Council, and other promoters of an FAO process, the discussions were mired by the recent disputes at the WTO over US laws intended to protect dolphins and turtles. Another eco-label, such as the MSC, was considered a potential barrier to trade, designed to limit market access for developing world fisheries, and hence it was not viewed favorably by these countries (O'Riordan 1998). [44]

Across the Atlantic in the US, two separate industry-led initiatives took form, one coming from the wild-capture side and the other from aquaculture. With the wild-capture industry, an initiative took form in March 1997, when a coalition of seafood companies, organized by the National Fisheries Institute (NFI), announced the launch of "principles for responsible fisheries" a program for guiding industry practices from extraction through to marketing. These principles were approved by the NFI Board in April of the same year (National Fisheries Institute 1997a), and, similar to the MSC, they built off the FAO code of conduct for responsible fisheries (National Fisheries Institute 1997b). In

[42] http://www.fao.org/DOCREP/003/X8002E/x8002e05.htm#P35
[43] http://www.fao.org/DOCREP/003/X8002E/x8002e05.htm#P35
[44] In 1999, the Nordic Council continued with this work independently, setting up a Technical Working Group on Ecolabeling Criteria. It released a report in 2000 that again emphasized the importance of government or intergovernmental bodies as the standards setters for eco-labels (Stokke 2004). (see http://www.fao.org/DOCREP/003/X8002E/x8002e05.htm#P35)

June of 1998, the NFI, choose to create a separate organization – the Responsible Fisheries Society (RFS) – as a group to facilitate the implementation of the Principles (National Fisheries Institute 1998).

Within aquaculture, the development of other programs followed species lines. For shrimp the focus of concern was the intensification of production and the controversial clearing of mangrove forests for Shrimp-farm facilities and the local negative social and environmental impacts of these practices. Efforts against industrial-shrimp farm expansion had been coordinate by the Mangrove Action Project (MAP) since 1992 and had gained prominence in the mid 1990s (Stonich and Bailey 2000).[45] In 1996, MAP helped organize a strategy meeting involving international environmental and social non-profits along with local groups based in the countries where shrimp farming was growing.[46] The first meeting was held in April 1996 concurrent with the UN Commission on Sustainable Development and sought to highlight the problems and demand changes. This included presenting a declaration to the UN General Assembly on the unsustainable character of aquaculture practices (Stonich and Bailey 2000) and was followed by press releases and awareness raising efforts of US-based NGOs (Natural Resources Defense Council 1996). WWF staff in the US also hoped to convene a working group to define responsible shrimp farming, but did not link this effort to their own work on the MSC.[47]

[45] http://web.archive.org/web/20010417011535/http://www.earthisland.org/map/

[46] They aimed to fashion a US-based consumer campaign that would respect the concerns of local groups in the countries where shrimp farmers were spreading (Stonich and Bailey 2000).

[47] Jason Clay, a WWF official explained to a reporter how the MSC would first focus on large industrial fisheries, such as cod and haddock, avoiding the complications of tuna and shrimp fishing, or at least leaving these to be addressed by the organization in the future (Christensen 1997).

In response to these controversies, in March 1997, the Global Aquaculture Alliance established at a meeting of the World Aquaculture Society (an international association representing aquaculture industry and scientists) that was held in Seattle, Washington. Newspaper coverage of the event explained how the shrimp industry players saw the development as a way "to do what environmental groups are doing, but in our own name (Christensen 1997)."[48] The Alliance was initially conceived by 56 individuals from 12 countries (Global Aquaculture Alliance 1998b); their first order of business was to commission a report by two scientists – Drs C Boyd and M Phillips – that would propose a 'code of practices for mangrove protection.' (Bene 2005)

At the time, pressure from NGOs on the issue of shrimp aquaculture continued to grow. In October 1997, groups from 14 nations created the Industrial Shrimp Action Network during World Food Day (Ramsar 1997). Those sympathetic to industry noted how such NGO-collaborative efforts were a mounting threat given the ongoing fragmentation of fishing interests (International Foundation for the Conservation of Natural Resources 2001).[49]

Facing these pressures, the GAA continued developing standards; in 1998 a technical committee completed the first review of all the code of practices' nine principles (Global Aquaculture Alliance 1998a). A year later, the GAA released the first completed version and indicated that farms meeting the code would have access to a yet-to-be-developed eco-label (Global Aquaculture Alliance 1999). Shortly after, the RFS and the GAA announced a collaborative effort to create an eco-label for the entire

[48] This was a quote attributed to Rob Rosenberry, the owner of an industry publication, Shrimp News International.
[49] In fact, industry players were also aware that a similar coordinated campaign was being mounted against the salmon farming industry.

fisheries sector, aquaculture and wild-capture fisheries alike.[50] For the time, the program remained a first-party initiative open to all members of the industry.[51]

Thus, during the time the MSC took form and organics began working with aquaculture, industry, government, and environmental and social NGOs continued with other efforts to address fisheries problems. Most of these initiatives lacked all the features of an international certification program, as discussed above. Nevertheless, they served as embryonic competitors with the potential to become full fledge certification programs in the future.[52] The next section discusses the market's response and describes the ongoing creation of new certification initiatives.

5.4 Market response and ongoing developments

Early adoption of the MSC began in 2000. The first-ever MSC certification was awarded to Western Australian rock lobster fishery, which was closely followed by the Essex-based Thames herring fishery in the UK (Marine Stewardship Council 2000d) and the Alaska salmon fishery later in the year (Marine Stewardship Council 2000b). The Alaskan certification also led to an expanded MSC presence in the US market. NorQuest, an Alaska-based processor served as the intermediary for the certified fishery, providing labeled products to the US market. At the same time, Trader Jones, Whole Foods, Legal Seafood, and Shaw's were reported to have committed to sell MSC products (Marine

[50] According to the NFI, the eco-label would be available to "industry members who endorse the Principles For Responsible Fisheries of RFS or GAA's Principles For Responsible Aquaculture, and incorporate these Principles into their business (National Fisheries Institute 1999)."

[51] As their press releases explained: "both programs are open to all segments of the industry (e.g., producer, importer, distributor, retailer or restaurant operator) and require the preparation of reports or plans that document implementation of the RFS/GAA principles (National Fisheries Institute 1999)."

[52] In fact, in 2000, the NFI publicized its support for the American Forest and Paper Association's Sustainable Forestry Initiative (SFI) (National Fisheries Institute 2000), a program in direct competition with the forest sector Forest Stewardship Council. This at least suggests that the NFI recognized how its own RFS initiative could potentially become a similar competitor to the MSC.

Stewardship Council 2000c). Finally, in November of 2000, the MSC reported Migros – a supermarket chain in continental Europe – would begin selling the program's certified produce (Marine Stewardship Council 2000a).

In 2001, another three fisheries achieved MSC certification – New Zealand hoki (Marine Stewardship Council 2001d), Burry Cockle fishery in the UK (Marine Stewardship Council 2001b), and the South West mackerel handline fishery in the UK (Marine Stewardship Council 2001e). Market interest also continued expanding with 31 processors and 4 distributors in the US achieving chain of custody certifications in order to sell labeled MSC salmon in the US market; Whole Foods offered the first such products to end consumers (Marine Stewardship Council 2001a). Unilever also reported having sourced 5% of all its seafood products from MSC certified producers by the end of 2001 (Unilever 2002).

This early success did not assuage the program's critics. Questions were raised, for instance, about the practices of specific fisheries in relation to the goals of sustainability.[53] Overall these concerns centered on how MSC certified fisheries committed to improving their practices, rather than requiring that sustainable practices be in place before a fishery could pass an assessment (Pearce 2003).[54] The conflict over whether a commitment to improvements should justify certification came to head with a report commissioned by five US foundations to examine the MSC's certification work, looking particularly at the Alaskan salmon fishery, the New Zealand hoki fishery, the South Georgian toothfish, and the Aleutian Islands pollock fishery. The report argued that this practice was unacceptable and pressed for changes in order to restore confidence in

[53] See (Earle 2000) for a discussion of the Thames Herring fishery.
[54] Personal communication, WWF International official, May 29, 2007

the MSC, particularly among conservation organizations (Brown 2004). In rebuttal, the then Chief Executive of the MSC, Brendan May, explained in a news report at the time: “The MSC gives incentives and maintains pressure to improve conditions; we're not about certifying perfection (Schwarz 2004)." The report did have impacts and changes have been ongoing, with the MSC continuing to place greater effort on stakeholder engagement and improved consistency across certifiers.

As well, even with all the criticisms, the MSC remains the only comprehensive fisheries certification program. The RFS and GAA collaboration continued, but mainly focused on the GAA efforts to eco-label shrimp, meaning the competition was more directed towards organics than to the MSC’s work on wild-capture fisheries.[55] More broadly within aquaculture, there were a host of other initiatives that formed. In Europe, for instance, in 1997, a consortium of retailers launched EUREP.[56] The initiative produced the EUREP Good Agricultural Practices (GAP), a standard focused mostly on safety and quality, but with some provisions for good environment and labor practices (Konefal, Mascarenhas, and Hatanaka 2005). It would then, in 2004, release an Integrated Aquaculture Assurance standard covering the same safety, quality, environment, and labor issues, but specifically for farmed fish (EurepGAP 2004). A year later an updated standard was released that had been developed through a broader consultative process (EurepGAP 2005).

---

[55] In 2002, the Aquaculture Certification Council was formed to operate as an external auditor for the GAA Principles for Responsible Aquaculture (see: http://www.aquaculturecertification.org/accacti.html and http://www.aquaculturecertification.org/accgov.html)

[56] Spurred by food safety scares such as BSE (mad-cow disease) coupled with increasingly complicated and global supply chains, EUREP emerged to help standardize fresh produce production practices (Konefal, Mascarenhas, and Hatanaka 2005), and thus facilitate the smooth operation of global trade (EUREPGAP 2006).

In the UK, the Royal Society for the Prevention of Cruelty to Animals (RSPCA) had created Freedom Food back in 1994, as a labeling program and standards setting process that would assure livestock and other farm animals were raised in humane conditions. Freedom Food expanded its focus to fish farming in 2001, creating a standard for rearing farmed salmon, which it released in October 2002.[57] The entire Scottish Salmon farming industry took interest in eco-labeling around this time, an interest that also led to the creation of a new peak industry association: the Scottish Salmon Producers' Organisation. This new group created a Code of Good Practices for Finfish Farming, an evolution from the industry's previous focus on quality marks (e.g., the Tartan Quality Mark and Label Rouge). Similar country-based initiatives developed around the world, for instance shrimp farming in Bangladesh and salmon farming in Chile (Haland and Esmark 2002).

On balance, these initiatives have remained focused on aquaculture, leaving the MSC free of direct competitors. It has only had to deal with the controversies over its certification assessments and focus internally on improving its management systems. Some of the changes were done to comply with the FAO "Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries" which were released in 2005. Achieving compliance required two changes: separating accreditation from standards setting and setting up an independent process for receiving and responding to objections to fishery assessments. It accomplished these changes by mid-2006, becoming the first program to comply with the new guidelines (Marine Stewardship Council 2006a). These changes were generally well received; many

[57] http://www.fishonline.org/buying_eating/labelling.php

observers see these as important changes leaving the MSC in a continually improve position.

Similar successes occurred in the market. A huge boost came in 2006: Wal-mart committed to sourcing MSC certified fresh and frozen seafood by no later than 2011, starting with its 3,800 North American stores. Following this, its UK subsidiary, Asada, announced similar aims. As well, by the end of 2006, 332 seafood products in 25 countries were carrying the MSC logo (Marine Stewardship Council 2007a). By the April 2007, approximately 6% of the world's edible capture fisheries were engaged in the program. With salmon, MSC fisheries represent 42% of total world production; with prime white fish catch (cod, Pollock, hake, haddock, ling, and saithe), 32%; and with spiny lobster, 18% (Marine Stewardship Council 2007b). In only one year the number of labeled products had jumped to 668 (Marine Stewardship Council 2007b). Even with these successes, financial considerations still held. To address them, the MSC recently moved to increase the licensing fee for the use of its logo in the hopes of generating more funds to cover core expenses.[58]The increased fee combined with the increased use of the logo should bring a larger financial flow into the organization in the coming years.

As mentioned above, organics mostly remained committed to certifying aquaculture. However, because individual certifiers, such as the Soil Association and Naturland, are not controlled by IFOAM in terms of what they choose to certify, organic wild-capture was still an open possibility. KRAV, a Swedish-based certifier seized this opportunity by offering to develop a fisheries sustainability standard for wild capture fish

[58] Personal communications, MSC official, May 2007. For the 2005 – 2006 financial year, logo-licensing fees only represented 7% of the MSC operating budget; charitable donations, on the other hand, accounted for 75% (Marine Stewardship Council 2007a).

and shellfish.[59] The process began in 2000 when the Nordic countries, as was discussed above, were still skeptical of MSC, which led KRAV to believe their own initiative was more likely to gain acceptance in Scandinavia (KRAV 2002). Nevertheless, even this remained an initially confined threat since the project limited its focus to developing standards for "Swedish and possibly Norwegian fisheries (KRAV 2002)." Much later, in 2007, Naturland announced its intentions to develop wild-capture fisheries standards. It was also an offshoot from the MSC, being designed to better the livelihoods of fishers, an aspect of the MSC that had long been debated. In a press release, Naturland's spokesperson explained: "Through our work in many developing countries, we felt it would not be justified to certify a fishery which does not offer fair and decent working or living conditions for the fishermen employed in [the fishery] (Organic Consumers Association 2007)." The streamline approach the MSC had taken to addressing the social side of fisheries sustainability, it appears, gave Naturland the opportunity to develop an alternative approach that it believes will be more attuned to these issues. MSC is itself working on this issue, having set up a pilot project to enable data-deficient and small-scale fisheries better access to the program (Marine Stewardship Council 2007a). In other words, much is left to be determined around how Naturland's efforts evolve in relation to the MSC.

Thus, as the field of certification in the fisheries sector matures, nothing is yet set in terms of which programs will be addressing which issues. Although this malleability remains, the MSC has chosen to continue with its focus on capture fisheries. The Board issued a statement at the close of 2006 indicating that having given the issues

[59] It reportedly intended to initially focus on frozen cod, canned herring, and fresh shrimp and crabs (Haland and Esmark 2002).

considerable thought, the MSC would remain focused on their core competency in capture-fisheries (Marine Stewardship Council 2006b), a decision that has left open the door for other alternative approaches.

To date these come in a few forms. Organics continues to expand into more forms of aquaculture, with standards for salmon, trout, carp, shrimp, mussels, and perch, among others. Separately, the WWF has been working in the US on a host of aquaculture related issues. For instance, in 2004, they hosted a Salmon Aquaculture Dialogue, which included 60 individuals from 9 countries (World Wildlife Fund 2007). This process was meant to develop standards for appropriate salmon farming practices and is still ongoing. And it fits in the WWF's overall hope to develop "[Better Management Practices] BMP based aquaculture certification programs for key species,"[60] an aim that has received funding from the David and Lucile Packard Foundation.[61] The WWF explains that although there are many other existing schemes, none "have met WWF's goal of creating concise, measurable standards that will lead to effective reduction of the most important environmental and social impacts of aquaculture."[62] And, finally, in February 2007, the ISO announced the creation of a Technical Committee to be coordinated by Standards Norway that will work to develop standards for sustainable development of fisheries and aquaculture production (ISO 2007).

Thus, as of the middle of 2007 the MSC has gained a consolidated position in the marketplace, yet its decisions early on to focus on a streamline standard with little

---

[60] http://www.worldwildlife.org/cci/aquaculture_projects.cfm

[61] Personal communication, official from the Marine Conservation Society, June 2007. The Foundation's website lists to current grants for work on aquaculture for a total of $1,276,932. They have funded the Monterey Bay Aquarium Foundation with $276,932 for a project to "examine new standards for environmentally responsible aquaculture", and the WWF with $1 million for "continued development of aquaculture standards." (http://www.packard.org/searchGrants.aspx?RootCatID=3&CategoryID=226)

[62] http://www.worldwildlife.org/cci/aquaculture_projects1.cfm

specific attention to the social side of sustainable fisheries practices and its choice to focus only on wild-capture has enabled many more additional initiatives to enter. Likewise, the organic movement was itself inhibited from making a commitment for or against the entry into wild-capture and aquaculture production, though the lack of unity also meant that individual certifiers have dappled in both.

6. Conclusions

This paper has examined the historical development of social and environmental certification initiative in the fisheries sector. There are a few cursory lessons that emerge. First, the relationship between the activities of social movements and the development of certification programs appears critically important. Unlike the technological competition models from economics where innovation responds to a market demand, pressure from social movements can be as or more important as a driver of market interest. Consequently, the extent to which these groups support initiatives matters greatly for how likely they will gain widespread support, a point frequently noted in the literature on these initiatives (Cashore 2002; Bernstein and Cashore 2007).

A related point has to do with the choice by the MSC developers to avoid a membership organizational form. A tentative comparison with the development of the FSC appears to suggest that this choice had long-term implications for the MSC. Certainly, governance was again and again a source of debate. One view holds that by not giving organizations a direct stake in the MSC, it was easier for these other groups to stay outside the process, creating their own initiatives, or raising criticisms about the program without having to then help implement those changes. For instance, in forestry, Naturland was developing an organic standard for forestry practices around the time the FSC

developed. Instead of continuing, it chose to join the FSC and remains a member to present.

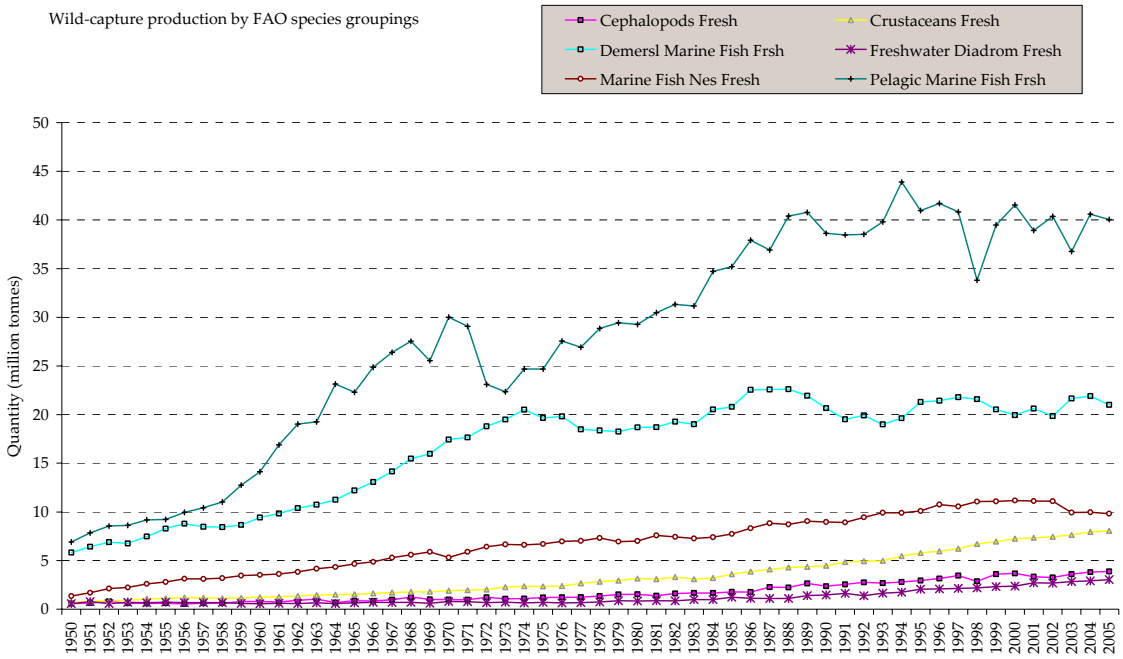
Clearly the advice given by the outside consultants hired to glean lessons from the FSC were concerned about the FSC's membership approach to stakeholder engagement. Yet even if the MSC had chosen to adopt a membership model, it is uncertain how this would have worked. Having been coordinated by Unilever and the WWF, early on, it was hard to separate the MSC from these supporters. There was interest in the MSC early on, as was apparent in the debates that occurred in *Samudra* and thus perhaps, had they been offered membership, groups like the ICSF would have jumped at the opportunity to be involved.

On the other hand, the fact that the WWF and Unilever were the progenitors of the MSC highlights the fragmentation of the fisheries sector. Social movements in the sector were by no means acting as a coordinated group when things got underway. Rather, single-issue or species campaigns were the norm. Moreover, the fact that government regulation in certain countries, for instance the US, was serving as a useful tool to change behavior, the need for a sector-wide certification was less apparent.

In spite of these challenges, the MSC has still been able to gain considerable market acceptance. Its choice to remain focused on wild-capture, create a streamline standard, and certify fisheries that were committed to improving towards environmentally responsible practices appear to have helped secure this quick uptake. Yet, they have also stirred more developments in the certification field with Naturland creating a wild-capture standard, and the various initiatives in the aquaculture sector. What will be interesting to see moving forward is how the initiatives are compared when buyers are

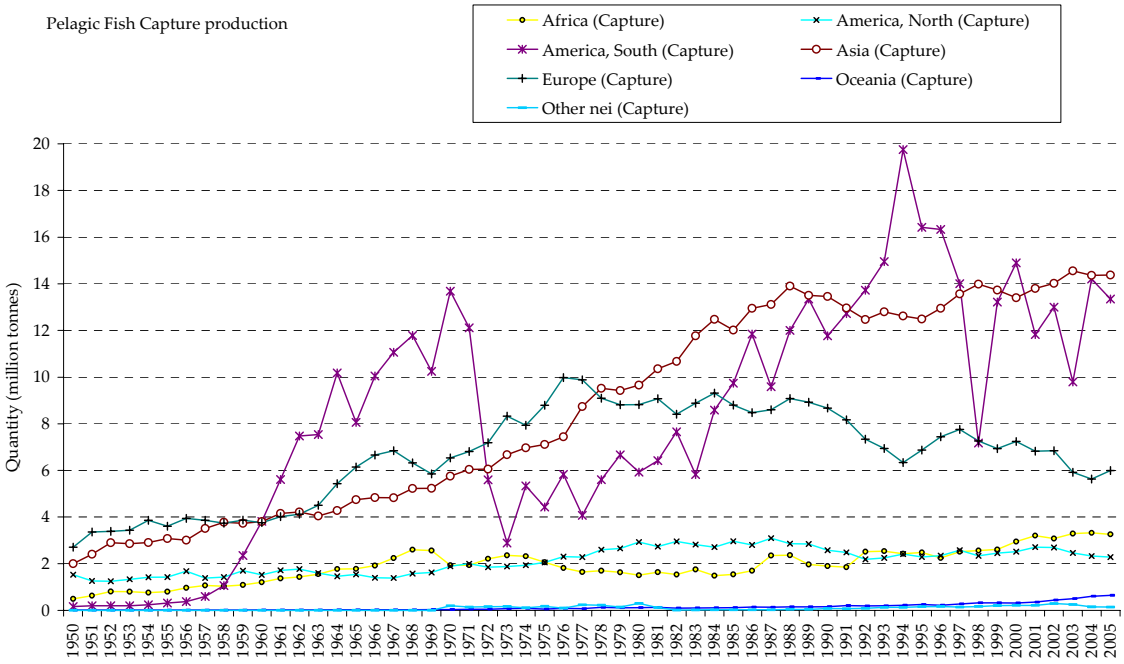
confronted by a decision between MSC wild-capture, Naturland certification, and eco-labeled farmed fish?

Figure 1, Historical data on global production from capture fisheries broken down by species type



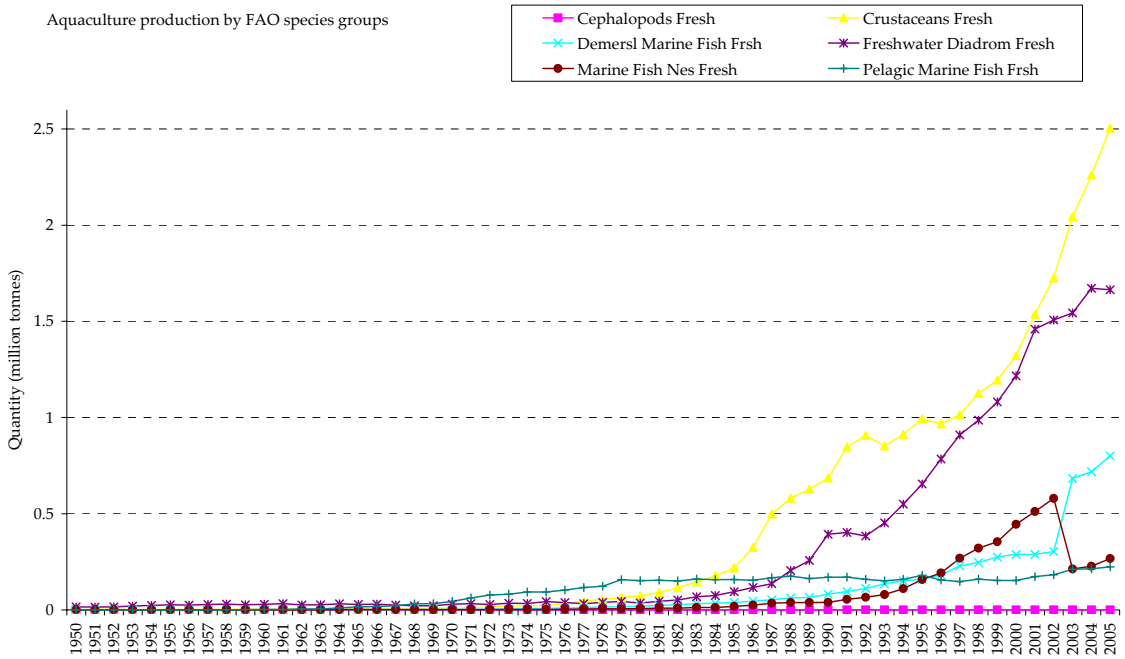
Source: http://www.fao.org/figis

Figure 2, Historical data on global production of Pelagic marine species by geographic region



Source: http://www.fao.org/figis

Figure 3, Historical data on aquaculture production broken down by species group



Source: http://www.fao.org/figis

7. Appendixes

Appendix 1, historic import and export intensity by species type and geographic region

Region	Species type	**Export intensity** Time period				**Import intensity** Time period			
		1960s	**1970s**	**1980s**	**1990s**	**1960s**	**1970s**	**1980s**	**1990s**
Africa	Cephalopods	17%	12%	4%	20%	0%	8%	0%	0%
	Crustaceans	5%	12%	8%	10%	3%	3%	3%	4%
	Demersal Marine Fish Fresh	2%	1%	0%	5%	1%	1%	1%	0%
	Freshwater Diadromous Fish	0%	0%	0%	0%	0%	0%	0%	0%
	Marine Fish nes Fresh	0%	1%	5%	6%	2%	30%	21%	18%
	Pelagic Marine Fish Fresh	0%	0%	0%	0%	0%	0%	7%	2%
Asia	Cephalopods	0%	0%	0%	1%	0%	0%	0%	1%
	Crustaceans	2%	2%	3%	1%	1%	1%	1%	2%
	Demersal Marine Fish Fresh	0%	0%	0%	0%	0%	0%	0%	1%
	Freshwater Diadromous Fish	1%	1%	1%	1%	1%	1%	1%	1%
	Marine Fish nes Fresh	0%	1%	1%	3%	0%	0%	1%	1%
	Pelagic Marine Fish Fresh	2%	3%	1%	2%	1%	1%	1%	2%
Central America & Caribbean	Cephalopods	8%	0%	9%	9%	0%	0%	0%	2%
	Crustaceans	2%	1%	3%	2%	0%	0%	0%	1%
	Demersal Marine Fish Fresh	0%	0%	1%	2%	0%	0%	0%	0%
	Freshwater Diadromous Fish	1%	2%	0%	0%	1%	0%	0%	0%
	Marine Fish nes Fresh	0%	1%	2%	5%	1%	2%	1%	2%
	Pelagic Marine Fish Fresh	2%	1%	2%	3%	0%	0%	0%	0%
Europe	Cephalopods	3%	2%	2%	6%	1%	2%	2%	12%
	Crustaceans	6%	9%	12%	17%	13%	14%	16%	18%
	Demersal Marine Fish Fresh	4%	4%	6%	9%	3%	4%	7%	8%
	Freshwater Diadromous Fish	9%	10%	15%	25%	12%	13%	15%	23%
	Marine Fish nes Fresh	1%	2%	10%	12%	1%	6%	24%	28%
	Pelagic Marine Fish Fresh	8%	6%	10%	12%	9%	5%	6%	7%
North America	Cephalopods	0%	3%	16%	2%	0%	0%	1%	2%
	Crustaceans	3%	2%	3%	6%	0%	1%	3%	5%
	Demersal Marine Fish Fresh	1%	1%	31%	4%	2%	4%	3%	3%
	Freshwater Diadromous Fish	5%	3%	2%	7%	6%	3%	3%	9%
	Marine Fish nes Fresh	0%	0%	5%	15%	0%	0%	2%	7%
	Pelagic Marine Fish Fresh	3%	1%	1%	2%	1%	0%	0%	2%
Oceania	Cephalopods	0%	2%	0%	0%	0%	0%	0%	0%
	Crustaceans	0%	3%	7%	22%	0%	1%	2%	0%
	Demersal Marine Fish Fresh	0%	1%	2%	2%	0%	0%	0%	0%
	Freshwater Diadromous Fish	4%	35%	3%	13%	0%	0%	0%	0%
	Marine Fish nes Fresh	0%	4%	3%	3%	1%	3%	4%	3%
	Pelagic Marine Fish Fresh	20%	1%	0%	3%	25%	3%	0%	0%
South America	Cephalopods	0%	0%	0%	0%	0%	1%	0%	0%
	Crustaceans	2%	2%	0%	0%	1%	1%	0%	0%
	Demersal Marine Fish Fresh	0%	2%	3%	2%	0%	3%	1%	1%
	Freshwater Diadromous Fish	0%	0%	1%	4%	0%	0%	0%	1%
	Marine Fish nes Fresh	0%	0%	1%	3%	0%	0%	1%	4%
	Pelagic Marine Fish Fresh	0%	0%	0%	0%	0%	0%	0%	0%

Source: http://faostat.fao.org/site/504/DesktopDefault.aspx?PageID=504

Appendix 2: International conventions and agreements relevant to fisheries management

Agreement	Description
Convention on the International Trade of Endangered Species of Wild Fauna and Fauna (CITES)	Negotiated in 1972, it entered into force in 1975. This binding agreement seeks to ensure international trade does not jeopardize the survival of endangered species. A few fisheries species are listed for protection against trade that threatens their survival.
UN Convention on the Law of the Sea (UNCLOS)	Negotiated in 1982, it entered into force in 1994. This convention provides the framework for regulating all manner of activities affecting the world's oceans.
Agenda 21: Program of Action for on Sustainable Development (Agenda 21)	Negotiated in 1992, the program of action set out what governments and other organizations at all levels could do to deal with ocean protection and further the implementation of the UNCLOS.
Convention on Biological Diversity (CBD)	Negotiated in 1992, it came into force in 1993. Its three provisions address conservation, sustainable use, and equitable and fair use of benefits derived from all forms of biological diversity, terrestrial and aquatic.
FAO Agreement to Promote Compliance with International Conservation and Management Measured by Fishing Vessels on the High Seas (FAO Compliance Agreement)	Adopted in 1993, the agreement outlines requirements for flagship states in order to ensure they can effectively regulate vessels fishing the high seas.
FAO Code of Conduct for Responsible Fisheries	Adopted in 1995, it provides a mix of voluntary and compulsory provisions related to other agreements to serve as a complete guide to appropriate fisheries and aquaculture management.
UN Agreement for the Implementation of the Provision of the UN Convention on the Law of the Sea pertaining to Conservation of Straddling and Highly Migratory Fish Stocks (UN Fish Stocks Agreement)	Negotiated in 1995, it came into force in 2001. It was a response to the failure of UNCLOS to regulate high-sea fishing and thus established new requirements for managing straddling and highly migratory stocks, including an ecosystem approach to protecting the marine environment.
Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem (Reykjavik Declaration)	Agreed in 2001, the declaration committed the participating states to adopt an ecosystem approach to fisheries management.

Source: (Cochrane and Doulman 2005)

8. References

Aberdeen Press and Journal. 1998. *Summer Isles Salmon Selling Point Is Natural Conditions* [Business: Companies, Pg.14]. Aberdeen Press and Journal, October 21 1998 [cited April 13 2007]. Available from http://web.lexis-nexis.com.

Ahmed, M. 2005. Market Access and Liberalisation in Fish Trade. In *Untangling Fisheries and Trade: Towards Priorities for Action*. Geneva, Switzerland: International Centre for Trade and Sustainable Development.

ANP English News Bulletin. 1996. *Unilever, WWF Unite in Bid to Save Fish Stocks*. Stichting Algemeen Nederlands Persbureau, February 23 1996 [cited February 5 2007]. Available from http://web.lexis-nexis.com.

Arthur, W. B. 1989. Competing Technologies, Increasing Returns, and Lock-in by Historical Events. *Economic Journal* 99 (394):116-131.

Audubon Society. 1998. *What's a Fish Lover to Eat? The Audubon Guide to Seafood* [Archived online magazine]. The Aububon Magazine, May - June 1998 [cited April 17 2007]. Available from http://web.archive.org/web/20000815235804/magazine.audubon.org/seafood/guide/.

Auld, G., C. Balboa, T. Bartley, S. Bernstein, B. Cashore, and K. Levin. 2006. The Emergence of Non-State Market Driven (NSMD) Governance Systems across Sectors. In *47th Convention of the International Studies Association*. San Diego, California.

Auld, G., C. Balboa, T. Bartley, B. Cashore, and K. Levin. 2007. The Spread of the Certification Model: Understanding the Evolution of Non-State Market Driven Governance. Paper read at 48th Convention of the International Studies Association, February 27 - March 3, at Chicago, Illinois.

Bair, J., and G. Gereffi. 2001. Local Clusters in Global Chains: The Causes and Consequences of Export Dynamism in Torreon's Blue Jeans Industry. *World Development* 29 (11):1885-1903.

Bartley, T. 2003. Certifying Forests and Factories: States, Social Movements, and the Rise of Private Regulation in the Apparel and Forest Products Fields. *Politics & Society* 31 (1):1-32.

———. 2005. Institutional Emergence in an Era of Globalization: The Rise of Social and Environmental Certification Systems. In *prepared for 2005 International Studies Association Convention*. Honolulu, Hawaii.

Bene, C. 2005. The Good, the Bad and the Ugly: Discourse, Policy Controversies and the Role of Science in the Politics of Shrimp Farming Development. *Development Policy Review* 23 (5):585-614.

Bernstein, S., and B. Cashore. 2007. Can Non-State Global Governance Be Legitimate? Overcoming the Conundrum of Market-Based Authority. New Haven, CT, Yale University.

Binnie, K. 1998. *Orkney-Grown Salmon Takes Organic Lead: Sainsbury Order Won for Produce* [Business: Companies, Pg.3]. Aberdeen Press and Journal, September 16 1998 [cited April 13 2007]. Available from http://web.lexis-nexis.com.

Boulton, L. 1997. *Retailer Backs Stock Saving Plan* [NEWS: UK; Pg. 06]. Financial Times (London), April 12 1997 [cited February 5 2007]. Available from http://web.lexis-nexis.com.

Broathen, J. N. 1999. *Label Gabble* [Samudra, Analysis: Ecolabelling]. Samudra, April 1999 [cited May 15 2007]. Available from http://oldsite.icsf.net//jsp/publication/samudra/pdf/english/issue_22/art06.pdf?null .

Brooks, K. M., and D. J. Stucchi. 2006. The Effects of Water Temperature, Salinity and Currents on the Survival and Distribution of the Infective Copepodid Stage of the Salmon Louse (Lepeophtheirus Salmonis) Originating on Atlantic Salmon Farms in the Broughton Archipelago of British Columbia, Canada (Brooks, 2005) - a Response to the Rebuttal of Krkosek Et Al. (2005a). *Reviews in Fisheries Science* 14 (1-2):13-23.

Brown, P. 2004. *Crisis of Credibility for 'Green' Fisheries: Drastic Reforms Urged to Save Watchdog from Collapse* [Guardian Home Pages, Pg. 10]. The Observer, February 21 2004 [cited February 5 2007]. Available from http://web.lexis-nexis.com.

Brownstein, C., M. Lee, and C. Safina. 2003. Harnessing Consumer Power for Ocean Conservation *Conservation Magazine* 4 (4).

Burgmans, A. 2003. *Cooperation Is Catching* [Issue: Globalization, Poverty, Trade, and the Environment]. Our Planet, February 2003 [cited May 2 2007]. Available from http://www.ourplanet.com/imgversn/134/burgman.html.

Caddy, J. F. 1999. Fisheries Management in the Twenty-First Century: Will New Paradigms Apply? *Reviews in Fish Biology and Fisheries* 9 (1):1-43.

Cashore, B. 2002. Legitimacy and the Privatization of Environmental Governance: How Non State Market-Driven (NSMD) Governance Systems Gain Rule Making Authority. *Governance* 15 (4 (October)):503-529.

Cashore, B., G. Auld, and D. Newsom. 2004. *Governing through Markets: Forest Certification and the Emergence of Non-State Authority*. New Haven: Yale University Press.

Christensen, J. 1997. *As Fish Farming Goes, It Faces Mounting Environmental Challenges* [Archived article]. The New York Times, March 1 1997 [cited May 24 2007]. Available from http://select.nytimes.com/search/restricted/article?res=F30E17FA3B550C728CDDAA0894DF494D81.

Cochrane, K. L., and D. J. Doulman. 2005. The Rising Tide of Fisheries Instruments and the Struggle to Keep Afloat. *Philosophical Transactions of the Royal Society B-Biological Sciences* 360 (1453):77-94.

Commins, K. 2003. IFOAM Accreditation and the International Organic Accreditation Service. In *The Organic Guarantee System: The Need and Strategy for Harmonization and Equivalence*, edited by C. Westermayer and B. Geier. Tholey-Theley IFOAM, FAO, and UNCTAD.

———. 2004. Overview of Current Status of Standards and Conformity Assessment Systems. In *Harmonization and Equivalence in Organic Agriculture*, edited by U. Hoffman, S. Twarog, A. Compagnoni, G. Rundgren, N. E.-H. Scialabba and S. Doyran. Geneva, Rome, Bonn: UNCTAD, FAO, and IFOAM.

Conklin, E. E. 1991. *Consumer Activist Knows How to Say No and Make It Count* [LIVING: 131 LINES, Pg. C1]. Seattle Post Intelligencer, May 9 1991 [cited January 27 2007]. Available from http://web.lexis-nexis.com.

Constance, D. H., and A. Bonanno. 1999. Contested Terrain of Global Fisheries: "Dolphin-Safe" Tuna, the Panama Declaration, and the Marine Stewardship Council. *Rural Sociology* 64 (4):597-623.

Courville, S. 2003. Social Accountability Audits: Challenging or Defending Democratic Governance? *Law & Policy* 25 (3):269-297.

Cowan, R. 1990. Nuclear-Power Reactors - a Study in Technological Lock-In. *Journal of Economic History* 50 (3):541-567.

Cutler, A. C., V. Haufler, and T. Porter. 1999. The Contours and Significance of Private Authority in International Affairs. In *Private Authority and International Affairs*, edited by A. C. Cutler, V. Haufler and T. Porter. Albany, New York: State University of New York Press.

David, P. A. 1985. Clio and the Economics of Qwerty. *American Economic Review* 75 (2):332-337.

deFontaubert, A. C. 1995. The Politics of Negotiation at the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks. *Ocean & Coastal Management* 29 (1-3):79-91.

Delgado, C. L., N. Wada, M. W. Rosegrant, S. Meijer, and M. Admed. 2003. Outlook for Fish to 2020: Meeting Global Demand. pg. 36, Washington, D.C., and Penang,

Malaysia, International Food Policy Research Institute and the WorldFish Center. Available from http://www.ifpri.org/pubs/fpr/pr15.pdf.

DeSombre, E. R. 2000. *Domestic Sources of International Environmental Policy : Industry, Environmentalists, and U.S. Power, American and Comparative Environmental Policy*. Cambridge, Mass.: MIT Press.

Earle, M. 2000. Marine Stewardship Council: Thames up or Thumbs Down? *Samudra* (27).

Edwards, R. 2000. *Supermarkets Criticised over 'Organic' Fish*. The Sunday Herald, January 9 2000 [cited April 13 2007]. Available from http://web.lexis-nexis.com.

EurepGAP. 2004. *Eurepgap Aquaculture Code Launched* [Online press release]. EurepGAP, October 19 2004 [cited April 4 2007]. Available from http://www.eurepgap.org/fish/Languages/English/news/134.html.

———. 2005. *Aquaculture Code Version 2.1 Update Published* [Online press release]. EurepGAP, June 13 2005 [cited April 4 2007]. Available from http://www.eurepgap.org/fish/Languages/English/news/207.html.

EUREPGAP. 2006. *About Eurepgap* [Web page] 2006 [cited March 19 2006]. Available from http://www.eurepgap.org/Languages/English/about.html.

Evans, D. W. 2001. Status and Trends Reporting in Fisheries: A Review of Progress and Approaches to Reporting the State of World Fisheries. FAO Fisheries Circular No. No. 967, pg. 84, Rome, Italy, Food and Agricultural Organization of the United Nations. Available from ftp://ftp.fao.org/docrep/fao/007/y3260e/y3260e00.pdf.

Finlayson, A. 2004. Political Science, Political Ideas and Rhetoric. *Economy and Society* 33 (4):528-549.

Flanders, K. 1998. *WWF Fisheries Conference Seeks Solutions to Current Crisis*. M2 Presswire, September 16 1998 [cited February 5 2007]. Available from http://web.lexis-nexis.com.

Food and Agricultural Organization. 2007. The State of the World Fisheries and Aquaculture 2006. pg. 180, Rome, Italty, Fisheries and Aquaculture Department, Food and Agriculture Organization of the United Nations. Available from ftp://ftp.fao.org/docrep/fao/009/a0699e/a0699e.pdf.

Fridell, G. 2004. The Fair Trade Network in Historical Perspective. *Canadian Journal of Development Studies-Revue Canadienne D Etudes Du Developpement* 25 (3):411-428.

Friedman, M. 1999. *Consumer Boycotts : Effecting Change through the Marketplace and the Media*. New York: Routledge.

Garud, R., and P. Karnoe, eds. 2001. *Path Dependence and Creation*. Edited by A. Brief and J. Walsh, *Lea's Organization and Management Series*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

Gereffi, G., and M. Korzeniewicz, eds. 1994. *Commodity Chains and Global Capitalism, Studies in the Political Economy of the World System*. Westport, CT: Greenwood Press.

Global Aquaculture Alliance. 1998a. *Global Aquaculture Advocate* [Online Newsletter; Volume 1; Issue 2]. Global Aquaculture Alliance, August 1998a [cited April 1 2007]. Available from http://web.archive.org/web/19991001173029/gaalliance.org/august98.html.

———. 1998b. *Who We Are* [Archived web-page]. Global Aquaculture Alliance, August 17 1998b [cited April 1 2007]. Available from http://web.archive.org/web/19981205132926/www.gaalliance.org/who.html.

———. 1999. *GAA Unveils Codes of Practice and Eco-Label* [Archived web-page press release]. Global Aquaculture Alliance, July 15 1999 [cited April 2 2007]. Available from http://web.archive.org/web/19991105035426/www.gaalliance.org/codespress2.html.

Greenpeace. 2005. A Recipe for Disaster: Supermarkets' Insatiable Appetite for Seafood. pg. 96, London, UK, Greenpeace. Available from www.greenpeace.org.uk.

Gulbrandsen, L. H. 2005. Mark of Sustainability? - Challenges for Fishery and Forestry Eco-Labeling. *Environment* 47 (5):8-23.

———. 2006. Creating Markets for Eco-Labelling: Are Consumers Insignificant? *International Journal of Consumer Studies* 30 (5):477-489.

Guthman, J. 2004. *Agrarian Dreams : The Paradox of Organic Farming in California, California Studies in Critical Human Geography ; 11*. Berkeley: University of California Press.

Haland, B. L., and M. Esmark. 2002. Clean Conscience Consumption of Seafood: A Summary of Eco-Labels and Environmental Management Systems for Fisheries and Aquaculture Products. Working Document, pg. 16, WWF-Norway.

Harris, G. 1999. *The Organic Alternative* [Home news]. The Times (London), July 30 1999 [cited April 13 2007]. Available from http://web.lexis-nexis.com.

Hernes, H.-K., and K. H. Mikalsen. 2002. From Protest to Participation? Environmental Groups and the Management of Marine Fisheries. *Mobilization: An International Quarterly* 7 (1):15-28.

Hilborn, R. 2006. Salmon-Farming Impacts on Wild Salmon. *Proceedings of the National Academy of Sciences of the United States of America* 103 (42):15277-15277.

Hill, B. 1997. *Label to Protect Shoal Food*. The Scotsman, April 22 1997 [cited February 5 2007]. Available from http://web.lexis-nexis.com.

International Foundation for the Conservation of Natural Resources. 2001. *United They Stand...Against Sustainable Fisheries* [Online posting]. International Foundation for the Conservation of Natural Resources, April 4 2001 [cited April 5 2007]. Available from http://www.fisheries.ifcnr.com/article.cfm?NewsID=113.

International Organic Accreditation Service. 2006. *History* [Web page]. International Organic Accreditation Service, March 21 2006 [cited April 1 2006]. Available from http://www.ioas.org/WEBSITE/0410_History.htm.

Islas, J. 1997. Getting Round the Lock-in in Electricity Generating Systems: The Example of the Gas Turbine. *Research Policy* 26 (1):49-66.

ISO. 2007. *ISO Standards Will Promote Sustainable Development of Fisheries and Aquaculture* [Press release]. International Organization for Standardization, May 30 2007 [cited June 9 2007]. Available from http://www.iso.org/iso/en/commcentre/pressreleases/2007/Ref1057.html.

Joling, D. 1999. *Pilot Projects Aim toward Organic Label for Alaska Seafood* [Newswire]. The Associated Press State & Local Wire, June 23 1999 [cited October 4 2006]. Available from http://web.lexis-nexis.com.

Katz, M. L., and C. Shapiro. 1986. Technology Adoption in the Presence of Network Externalities. *Journal of Political Economy* 94 (4):822-841.

Kemp, R., A. Rip, and J. Schot. 2001. Constructing Transition Paths through the Management of Niches. In *Path Dependence and Creation*, edited by R. Garud and P. Karnoe. Mahwah, New Jersey and London: Lawrence Erlbaum Associates Inc. .

Kennedy, B. 1999. *Orkney Salmon Goes Organic* [Fishing: Salmon, Pg.21]. Aberdeen Press and Journal, April 21 1999 [cited April 13 2007]. Available from http://web.lexis-nexis.com.

Knight, J. 1992. *Institutions and Social Conflict*, *Political Economy of Institutions and Decisions*. Cambridge [England] ; New York, N.Y.: Cambridge University Press.

———. 1995. Models, Interpretations, and Theories: Constructing Explanations of Institutional Emergence and Change. In *Explaining Social Institutions*, edited by J. Knight and I. Sened. Ann Arbor: University of Michigan Press.

Konefal, J., M. Mascarenhas, and M. Hatanaka. 2005. Governance in the Global Agro-Food System: Backlighting the Role of Transnational Supermarket Chains. *Agriculture and Human Values* 22 (3):291-302.

KRAV. 2002. *Project Description – Eco-Labelling of Wild Capture Fish and Shellfi* [Project description adopted by Project Steering Group]. KRAV -- Ekonomisk Forening, December 9 2002 [cited June 9 2007]. Available from http://arkiv.krav.se/arkiv/internationellt/projdes1.pdf.

Krkosek, M., M. A. Lewis, and J. P. Volpe. 2005. Transmission Dynamics of Parasitic Sea Lice from Farm to Wild Salmon. *Proceedings of the Royal Society B-Biological Sciences* 272 (1564):689-696.

Krkosek, M., M. A. Lewis, J. P. Volpe, and A. Morton. 2006. Fish Farms and Sea Lice Infestations of Wild Juvenile Salmon in the Broughton Archipelago - a Rebuttal to Brooks (2005). *Reviews in Fisheries Science* 14 (1-2):1-11.

Kura, Y., C. Revenga, E. Hoshino, and G. Mock. 2004. Fishing for Anwers: Making Sense of the Global Fish Crisis. pg. 152, Washington, D.C., World Resources Institute. Available from http://pdf.wri.org/fishanswer_fulltext.pdf.

Lipschutz, R. D. 1992. Reconstructing World-Politics - the Emergence of Global Civil Society. *Millennium-Journal of International Studies* 21 (3):389-420.

Mahoney, J. 2000. Path Dependence in Historical Sociology. *Theory and Society* 29 (4):507-548.

Mangel, M., L. M. Talbot, G. K. Meffe, M. T. Agardy, D. L. Alverson, J. Barlow, D. B. Botkin, G. Budowski, T. Clark, J. Cooke, R. H. Crozier, P. K. Dayton, D. L. Elder, C. W. Fowler, S. Funtowicz, J. Giske, R. J. Hofman, S. J. Holt, S. R. Kellert, L. A. Kimball, D. Ludwig, K. Magnusson, B. S. Malayang, C. Mann, E. A. Norse, S. P. Northridge, W. F. Perrin, C. Perrings, R. M. Peterman, G. B. Rabb, H. A. Regier, J. E. Reynolds, K. Sherman, M. P. Sissenwine, T. D. Smith, A. Starfield, R. J. Taylor, M. F. Tillman, C. Toft, J. R. Twiss, J. Wilen, and T. P. Young. 1996. Principles for the Conservation of Wild Living Resources. *Ecological Applications* 6 (2):338-362.

Marine Stewardship Council. 1999a. *About* [Archived web-page]. Marine Stewardship Council, January 25 1999a [cited March 23 2007]. Available from http://web.archive.org/web/19990125101405/http://www.msc.org/.

———. 1999b. *MSC Structures: The Marine Stewardship Council Structure and Governance* [Archived web-page]. Marine Stewardship Council, January 1999b [cited May 15 2007]. Available from http://web.archive.org/web/19990125101405/http://www.msc.org/.

———. 2000a. *Environmental Organisation Praises Migros for Its Leadership and Vision in Providing Sustainable Seafood to Customers* [Press release]. Marine

Stewardship Council, November 15 2000a [cited October 2 2006]. Available from http://www.msc.org/html/ni_46.htm.

———. 2000b. *Marine Stewardship Council Awards Sustainability Label to Alaska Salmon* [Press release]. Marine Stewardship Council, September 9 2000b [cited October 2 2006]. Available from http://www.msc.org/html/ni_54.htm.

———. 2000c. *Support Grows for the Marine Stewardship Council Certification Programme* [Press release]. Marine Stewardship Council, September 23 2000c [cited October 2 2006]. Available from http://www.msc.org/html/ni_50.htm.

———. 2000d. *World's First Sustainable Seafood Products Launched* [Press release]. Marine Stewardship Council, March 3 2000d [cited October 2 2006]. Available from http://www.msc.org/html/ni_55.htm.

———. 2001a. *Alaska Salmon Processors/Distributors Pleased with Eco-Label* [Press release]. Marine Stewardship Council, November 13 2001a [cited October 2 2006]. Available from http://www.msc.org/html/ni_31.htm.

———. 2001b. *British Fishery - Burry Inlet Cockles, Is the Fifth Fishery Awarded the Marine Stewardship Council Eco-Label for Sustainability* [Press release]. Marine Stewardship Council, June 20 2001b [cited October 2 2006]. Available from http://www.msc.org/html/ni_10.htm.

———. 2001c. *MSC Announces New Governance Structure* [Press release]. Marine Stewardship Council, July 27 2001c [cited October 2 2006]. Available from http://www.msc.org/html/ni_36.htm.

———. 2001d. *New Zealand Hoki Fishery Certified to Marine Stewardship Council Standard* [Press release]. Marine Stewardship Council, March 15 2001d [cited October 2 2006]. Available from http://www.msc.org/html/ni_42.htm.

———. 2001e. *South West Mackerel Handliners Get MSC Sustainability Seal of Approval* [Press release]. Marine Stewardship Council, September 4 2001e [cited October 2 2006]. Available from http://www.msc.org/html/ni_34.htm.

———. 2006a. *Leader in Fishery Certification and Eco-Labelling Announces 100% Consistency with UN Guidelines* [Press release]. Marine Stewardship Council, September 26 2006a [cited June 9 2007]. Available from http://www.msc.org/html/ni_241.htm.

———. 2006b. *MSC Not to Develop Aquaculture Standard – MSC Board Statement* [Press release]. Marine Stewardship Council, November 20 2006b [cited June 9 2007]. Available from http://www.msc.org/html/ni_290.htm.

———. 2007a. *Annual Report 2005 / 2006*. Marine Stewardship Council 2007a [cited June 9 2007]. Available from http://www.msc.org/assets/docs/MSC_annual_report_05_06.pdf.

———. 2007b. *Certified Fisheries and Fisheries in Assessment* [Online pdf]. Marine Stewardship Council, April 2007b [cited June 9 2007]. Available from http://www.msc.org/assets/docs/fishery_certification/MSC_fisheries_06-07.pdf.

Mintzberg, H. 1978. Patterns in Strategy Formation. *Management Science* 24 (9):934-948.

National Fisheries Institute. 1997a. *NFI Board Approves Industry Code for Responsible Fishing, New Executive Vice President* [Archived web-page news release]. National Fisheries Institute, May 6 1997a [cited March 30 2007]. Available from http://web.archive.org/web/19980712140533/nfi.org/News_Room/pr9713.htm.

———. 1997b. *Seafood Coalition Announces 'Principles for Responsible Fisheries' to Promote Sustainable Fisheries* [Archived web-page news release]. National Fisheries Institute, March 20 1997b [cited March 30 2007]. Available from http://web.archive.org/web/19980712140614/nfi.org/News_Room/pr9709.htm.

———. 1998. *The Responsible Fisheries Society of the United States* [Archived web-page]. National Fisheries Institute, December 3 1998 [cited March 30 2007]. Available from http://web.archive.org/web/19981202141742/www.nfi.org/RFSUS.htm.

———. 1999. *RFS and GAA Merge Fisheries and Aquaculture Eco-Labeling Programs: Partnership Increases Participation in Industry's Sustainable Fisheries Program* [Archived web-page press release]. National Fisheries Institute, June 22 1999 [cited March 30 2007]. Available from http://web.archive.org/web/20010429031406/nfi.org/pressreleases/1999/pr9940.htm.

———. 2000. *NFI Supports Sustainable Forestry Initiative (SFI) Program* [Archived web-page press release]. National Fisheries Institute, April 18 2000 [cited March 30 2007]. Available from http://web.archive.org/web/20010420052951/nfi.org/pressreleases/2000/pr0011.htm.

Natural Resources Defense Council. 1996. *Shrimp Cocktail: Recipe for Disaster* [Archived web-page]. Natural Resources Defense Council, August 16 1996 [cited April 16 2007]. Available from http://web.archive.org/web/19961019030716/www.nrdc.org/status/ocshrsr.html.

Naylor, R. L., R. J. Goldburg, J. H. Primavera, N. Kautsky, M. C. M. Beveridge, J. Clay, C. Folke, J. Lubchenco, H. Mooney, and M. Troell. 2000. Effect of Aquaculture on World Fish Supplies. *Nature* 405 (6790):1017-1024.

Nelson, R. R., and S. G. Winter. 2002. Evolutionary Theorizing in Economics. *The Journal of Economic Perspectives* 16:23-46.

North, D. C. 1990. *Institutions, Institutional Change and Economic Performance*. New York: Cambridge University Press.

O'Riordan, B. 1997. Marine Stewardship Council: Who's Being Seduced? *Samudra* (18).

———. 1998. *Sticky Labels* [Report]. Samudra, December 1998 [cited May 2 2007]. Available from http://oldsite.icsf.net//jsp/publication/samudra/pdf/english/issue_21/art07.pdf?null .

OECD. 2005. Private Certification of a Fishery as Sustainable. In *Environmental Reguirements and Market Access*. Paris, France: Organisation for Economic Co-operation and Development.

Organic Consumers Association. 2007. *Seafood: Bringing Fair Trade and Sustainability Concerns Together* [News release]. Organic Consumers Association, February 13 2007 [cited June 9 2007]. Available from http://www.organicconsumers.org/articles/article_4131.cfm.

Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

———. 2000. Collective Action and the Evolution of Social Norms. *Journal of Economic Perspectives* 14 (3):137-158.

Pearce, F. 2003. Can Ocean Friendly Labels Save Dwindling Stocks? *New Scientist* 178 (2395):5.

Ponte, S. 2004. Standards and Sustainability in the Coffee Sector. Sustainable Commondity Initiative, a joint venture of the UN Conference on Trade and IISD, pg. 52, Winnipeg, Manitoba, International Institute for Sustainable Development. Available from http://www.iisd.org/pdf/2004/sci_coffee_standards.pdf.

Quarto, A., K. Cissna, and J. Taylor. 1996. Choosing the Road to Sustainability: The Impacts of Shrimp Aquaculture and the Models for Change. Paper read at International Live Aquatics Conference, October 13-15, at Seattle, Washington.

Ramsar. 1997. *Industrial Shrimp Action Network (Isa Net): Global Group Formed to Counter Destructive Industrial Shrimp Farming* [Press release]. The Ramsar Convention on Wetlands, October24 1997 [cited April 4 2007]. Available from http://www.ramsar.org/about/about_shrimp_action.htm.

Raynolds, L. T., D. Murray, and A. Heller. 2007. Regulating Sustainability in the Coffee Sector: A Comparative Analysis of Third-Party Environmental and Social Certification Initiatives. *Agriculture and Human Values* (Online).

Richards, L. J., and J. J. Maguire. 1998. Recent International Agreements and the Precautionary Approach: New Directions for Fisheries Management Science. *Canadian Journal of Fisheries and Aquatic Sciences* 55 (6):1545-1552.

Roheim, C. A., and J. G. Sutinen. 2006. Trade and Marketplace Measures to Promote Sustainable Fishing Practices. Issue Paper No. 3: Natural Resources, International Trade and Sustainable Development, pg. 58, Geneva, Switzerland, International Centre for Trade and Sustainable Development (ICTSD) and High Seas Task Force (HSTF). Available from http://www.ictsd.org/pubs/ictsd_series/nat_res/Roheim_Sutinen_2006.pdf.

Salter, L. 1999. The Standards Regime for Communication and Information Technologies. In *Private Authority and International Affairs*, edited by A. C. Cutler, V. Haufler and T. Porter. Albany: State University of New York.

Sasser, E., A. Prakash, B. Cashore, and G. Auld. 2006. Direct Targeting as an NGO Political Strategy: Examining Private Authority Regimes in the Forestry Sector. *Business and Politics* 8 (3):1-34.

Schwarz, W. 2004. *Protection Not Perfection: The Marine Stewardship Council Aims to Do for Fish What the Soil Association Does for Organic Food* [Guardian Society Pages, Pg. 13]. The Guardian (London), March 10 2004 [cited February 5 2007]. Available from http://web.lexis-nexis.com.

Scialabba, N. E.-H., and C. Hattam. 2002. Organic Agriculture, Environment and Food Security. Environment and Natural Resources Series, No. 4, pg. 258, Rome, Food and Agriculture Organization of the United Nations. Available from http://www.fao.org/DOCREP/005/Y4137E/Y4137E00.htm.

Snidal, D. 1985. Coordination Versus Prisoners-Dilemma - Implications for International-Cooperation and Regimes. *American Political Science Review* 79 (4):923-942.

Soil Association. 2004. *Fish Farming and Organic Standards: Information Sheet*. Soil Association 2004 [cited January 12 2007]. Available from http://www.soilassociation.org/web/sa/saweb.nsflibrarytitles/19426.html.

———. 2006. *A Brief History of the Soil Association* [Online pdf]. Soil Association, March 13 2006 [cited October 4 2006]. Available from http://www.soilassociation.org/web/sa/saweb.nsf/librarytitles/NT00018FC6.html/$file/a%20brief%20history%20of%20the%20Soil%20Association.pdf.

Stokke, O. S. 2004. Labelling, Legalisation and Sustainable Management of Forestry and Fisheries. Paper read at The Fifth Pan-European International Relations Conference, September 9 - 11, at The Hague, Netherlands.

Stonich, S. C., and C. Bailey. 2000. Resisting the Blue Revolution: Contending Coalitions Surrounding Industrial Shrimp Farming. *Human Organization* 59 (1):23.

Sutton, M. 1996. Marine Stewardship Council: New Hope for Marine Fisheries. *Samudra* (15).

———. 1998. Marine Stewardship Council: An Appeal for Co-Operation. *Samudra* (19).

Sutton, M., and C. Whitfield. 1996. *A Powerful Arrow in the Quiver* [Letter]. Samudra 1996 [cited May 15 2007]. Available from http://icsf.net/icsf2006/uploads/publications/dossier/pdf/english/issue_56/chapter340.pdf.

Synnott, T. 2005. Some Notes on the Early Years of FSC. pg. 84, Saltillo, Mexico.

Talbot, J. M. 2004. *Grounds for Agreement : The Political Economy of the Coffee Commodity Chain*. Lanham, MD: Rowman & Littlefield Publishers.

Turcsik, R. 1997. *Environmental Logo Set for Seafood*. BrandMarketing Supplement to Supermarket News, November 1997 [cited April 2 2007]. Available from http://web.lexis-nexis.com.

Unilever. 2002. *Sustainability Initiatives: Fish* [Archived web-page]. Unilever, November 28 2002 [cited March 24 2007]. Available from http://web.archive.org/web/20021017195744/www.unilever.com/environmentsociety/sustainabilityinitiatives/fish/.

Unruh, G. C. 2000. Understanding Carbon Lock-In. *Energy Policy* 28 (12):817-830.

Wessells, C. R., K. Cochrane, C. Deere, P. Wallis, and R. Willmann. 2001. Product Certification and Ecolabelling for Fisheries Sustainability. FAO Fisheries Technical Paper, No. 442, pg. 83, Rome, Food and Agriculture Organization of the United Nations.

Wilkinson, J. 2006. Fish: A Global Value Chain Driven onto the Rocks. *Sociologia Ruralis* 46 (2):139-153.

World Wildlife Fund. 2007. *Salmon Aquaculture Dialogue* [Web-page]. World Wildlife Fund, April 2 2007 [cited April 2 2007]. Available from http://www.worldwildlife.org/cci/dialogues/salmon.cfm.

Young, O. R. 1999. *Governance in World Affairs*. Ithaca, NY: Cornell University Press.