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Triggering a Diverse Seafood Diet: Exploring Perceptions of Sustainable Seafood Systems in New England

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TRIGGERING A DIVERSE SEAFOOD DIET: EXPLORING PERCEPTIONS OF SUSTAINABLE SEAFOOD SYSTEMS IN NEW ENGLAND

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ABSTRACT

New England's seafood production systems involve social relationships with food that are at odds with ecosystem health and longevity. Customers continue to demand, fishers continue to catch, and suppliers continue to sell species from increasingly threatened populations instead of abundant species that can be harvested sustainably. Harvesters and markets have been trapped, forced to depend on a narrow range of species despite opportunities to diversify marine food system markets and tastes. The aim of this study is to build a better understanding of how New England's local seafood movement and market can foster a sustainable socio-ecological seafood system. The argument of this thesis is that, while conscientious customers and harvesters are essential to an ecologically sustainable and socially equitable food system, seafood dealers have more power to swing local and regional seafood markets in a new direction. Caring for the ecosystem and caring for fishermen can still involve wild harvested seafood, it just means passing up the mighty cod for a more diverse array of seasonal, locally abundant species. That shift does not happen without innovative middlemen: seafood dealers that are willing to gamble.

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CHAPTER 1: INTRODUCTION

For centuries, the humble codfish has epitomized New England's fishing industry and the region itself. Two hundred years ago – and likely long before and in more places – fishermen joked that cod were so plentiful in the Gulf of Maine they could cross it without getting their feet wet. A single species fueled the growth of a region and, arguably, a country (Kurlansky, 1998). Though the glory days of cod fishing are long gone, modern seafood systems have long memories. Their participants – fishermen, customers, seafood dealers – still seek to maintain some semblance of the glory days; they try to sustain fishing communities and an iconic way of life on the backs of singular species' instead of learning an important lesson from history: marine monocultures eventually lead to ecological and social collapse. But why has it come to this when New England's marine ecosystems are still capable of sustaining the next generation of fishermen with abundant species of seafood that can be harvested sustainably, even as we speak?

New England's seafood production systems involve social relationships with food that are at odds with ecosystem health and longevity. Customers continue to demand, fishers continue to catch, and suppliers continue to sell species from increasingly threatened populations instead of abundant species that can harvested sustainably (Kurlansky, 1998). Despite relative flexibility of fishers and aquaculture operations to catch and produce a diverse array of marine products and adapt to changing environmental conditions (Pinsky and Fogarty, 2012; Silva and Lopes, 2015), evidence suggests that consumer preferences have not developed alongside emerging opportunities (Cathy A. Roheim et al., 2011; Witkin et al., 2015). Harvesters and markets have been

bottlenecked, forced to depend on a narrow range of species (Steneck et al., 2011). Though United States fisheries are some of the best managed sources of marine food in the world, many still operate within a positive feedback loop – facilitated by historic preferences, static markets, and management practices – that prevents truly sustainable resource use that can support important and iconic fishing communities.

But there are concerted efforts to end this cycle. Despite current challenges and the inconsistent nature of wild-harvest fisheries, shifts in customer preferences and values, along with burgeoning direct-marketing business strategies, are reshaping interactions between ecosystems and markets as well as the way individual consumers, seafood dealers, and fishermen perceive their roles in food production systems. Reimagined production and supply systems may provide a platform to cultivate new attitudes toward marine food and an opportunity to align consumer behavior more closely to ecosystem needs. Understanding what drives consumers to alter their practices is a necessary step toward creating a more diverse and sustainable marine food system in New England (Hanson et al., 1995). Therefore, identifying the barriers to shifts in seafood buying behavior could inform future marketing initiatives and allow them to match the demands and characteristics of a wide range of consumer groups to a wider array of available species. Market diversification may also provide a better price for marine food producers that harvest in a sustainable manner, supplementing management efforts to rebuild struggling fish stocks and incentivizing responsible behavior for each group within the supply chain (Brinson et al., 2011).

However, this thesis argues that market dynamics are of greater significance than individual seafood choices alone. Relationships between fishermen and buyers have been

documented as an important factor in how fishermen make decisions about where to sell their fish (Wilson, 1980); trust the two groups plays a vital role in in establishing and maintaining business relationships. Therefore, it is just as vital to understand the malleable relationships between consumers, producers, products, and production systems.

Essential Context within New England's Seafood System

This thesis is situated at a crossroads for New England's fishing industry. Despite a long history of opposition to rights-based fisheries management (Singer, 2011; St Martin, 2007), the region is reeling from "the ecological, social, economic, and food system consequences of fleet consolidation, privatization of fishing access rights" (Tolley, 2017; p. 1) and the "failure of single-species approaches to sustaining fish populations, ecosystems, and fishing-dependent communities" (Brewer, 2011; p. 1). In January 2018, the National Oceanic and Atmospheric Administration (NOAA) fined Carlos Rafael (the self-proclaimed "Codfather") $1 million, revoked his fishing and seafood dealer licenses, and gave him a lifetime ban from all fisheries after he pled guilty to 28 counts of fraud and misreporting catch within the New England groundfish fishery. Despite warnings that an individually transferable quota (ITQ) system of management would threaten traditional fishing communities (Holland and Wiersma, 2010), ITQs allowed Rafael to consolidate power within the New England ground fishery, force many small-boat, owner operator fishermen out of business, and skew catch data essential to establishing the appropriate catch limits (Editorial Board, 2017; Horgan, 2017).

Though fisheries management measures, like catch shares and ITQs, are established to prevent or reverse fisheries collapse and incentivize ecologically

responsible resource use (Costello et al., 2008), they do not always work as planned. The Codfather case demonstrates a need to protect the agency of small-boat, owner-operator fishermen while continuing to seek an ecologically sustainable, lasting seafood system. Greed certainly drove Carlos Rafael's criminal enterprise and led to a crisis within New England's fishing communities, but the social fixation on a singular, dwindling resource – cod – also contributed to the present situation (Hutchings and Myers, 1994).

New Englanders have a long history of caring for the sea's bounty. They care by iconizing their local fishermen and picturesque fishing communities. They care by promoting and consuming seafood, particularly species that have had an outsized influence on their history and growth. In New England, that means cod (Kurlansky, 1998). Even as stocks have collapsed, cod remains a regional icon. Flaky, mild, and white-fleshed, it has also become a symbol of cultivated wilderness and the garden we pick from at the grocery store; a symbol of what we want out of the marine environment. Our singular focus – socially and economically valuing cod above the rest of New England's marine bounty – shapes markets and thus the marine food web.

However, in New England, care for the ocean and its resources also manifests in the form of regulation, conservation, and resource management; attempts to rebuild dysfunctional systems and protect important species and essential habitats so future generations can benefit from their existence. The multiple ways of caring for seafood have become tangled, contradictory, and may actually perpetuate destructive anthropogenic influences on natural spaces (Bocci, 2017). The fact that fishermen and seafood consumers in Northeastern America "can have such a profound impact on the ocean is sobering" (Rozwadowski, 2017). But the disappearance of cod is not the most

sobering aspect of New England's history; it is their *failure to come back* that highlights cod's place, and ours, in the food system. How can New Englander'– seafood system actors – customers, harvesters, scientists, fisheries managers, politicians – care for ecosystems and resources through conservation while still idolizing and over-consuming certain species as historically important food sources? How can communities demand rights to harvest and consume and still expect a sustained system? Species conservation efforts that clash with declining fishing communities, and New England fishing cultures dependent on historically (and currently) popular species, are unstable (Agrawal and Gibson, 1999). Further, markets that focus on single species' – marine monocultures – instead of valuing diversity, miss opportunities to maintain and profit from socio-ecological balance (Alden, 2011).

When markets misrepresent seafood, whether it is through mislabeling and seafood fraud or cultivation of an uninformed customer base, they risk further reducing consumer connections to the sea. Because most fresh/frozen fish sold in the United States is sold as fillets (Warner et al., 2013), seafood transactions lack some of the intimacy present in terrestrial meat markets. While people readily associate steak with cows and most chops with pigs, that same connection is often absent between a fillet and specific species of fish. Though fish is considered a wild food, people have intervened and made the system highly anthropogenic. Because the average customer is unable to tell the difference between most fillets of white fish (Warner et al., 2013), markets are able to present undiversified seafood options. In fact, in 2015, just ten species of fish and shellfish made up ninety percent of the seafood consumed in the United States in recent years (National Fisheries Institute, 2018). New England's cod obsession demonstrates a

lack of market diversification that leads to static, unvaried choices. Who goes to Cape Cod looking for dogfish and pollock? Undiversified markets and tastes become especially dangerous for fishing communities as fish stocks and ecosystems change.

However, anthropogenic drivers are not always detrimental. If seafood systems are lasting reflections of human relationships with marine ecology, perhaps continued intervention can be a solution. If New England's seafood market has historically had the capacity to alter fish populations by acting contrary to nature's historical processes, perhaps local seafood culture can intervene in sustainable, balanced ways, getting back to the "right nature" (Cronon, 1996) by supporting integrated nature-culture systems. As consumers, we are deeply connected to the world through food, although we are often blind to these connections because of the way we consume. Seafood is no different and it can erase or establish connections to community and our coastal past. In New England, seafood is a proxy for the ocean; it evokes cultural memories of beauty, raw power, diversity, bounty, and life. Local seafood producers have even created a term, "'merroir,' which refers to the flavors imparted by different areas of the sea," (Martell 2011) acknowledging that the marine landscape is not a homogenous expanse but is instead a biodiverse canvas of tastes, discovery, and even cultivation. Many businesses are recognizing that, like agricultural products, seafood is can also be cultivated. Given the meteoric rise of aquaculture production around the world in the last thirty years, that may now seem obvious (FAO 2016), but aquaculture is only one form of marine farming. While we do not necessarily overlook anthropogenic impacts on wild fish stocks, referring to seafood as the last wild food (Greenberg, 2011) ignores how regional consumers and harvesters shape and alter marine ecosystems in New England.

Rise of the Local Food Movement

Driven by passionate, committed food system practitioners and activists, America's seafood system is slowly moving in a more sustainable direction. Progress within this local seafood movement was preceded and has been spurred by the rise of farmers' markets and community supported agriculture (CSA) programs which have helped grow customer knowledge about seasonality and localness (Cone and Myhre, 2000) and promote social and product diversity within food systems (Thompson and Coskuner-Balli, 2007). Farmers' markets and CSAs laid the groundwork for an alternative market that fosters closer ties between consumers and harvesters (Hinrichs, 2000).

Although the concept is loosely based on the foundations of community supported agriculture, a CSF is not a standardized business model (Campbell et al., 2013). Therefore, these businesses have evolved differently in different places, with varying numbers of steps between the boat and the plate (Bolton et al., 2016). Direct market initiatives have helped reshape the role of middlemen in local seafood systems into that of a facilitator and supply chain coordinator. While cutting out middlemen entirely – an early goal of CSFs (Witter, 2012) – was not feasible, redefining how seafood moves from fishermen to customers has created space for supply systems to adapt to the needs of fishermen and ecosystems. CSFs are able to create place-based outcomes, that include social conditions in their definitions of sustainability, something that large-scale operations struggle to do (LocalCatch.org, 2016).

Leaders of a local seafood movement are reimagining relationships between culture and ecosystems in a similar way, encouraging markets to apply food sustainability

ideals, developed in terrestrial food systems, their marine counterparts (Campbell et al., 2013). Direct marketing initiatives, like community supported fisheries (CSF) and boat-to-plate initiatives, show that community cohesiveness and an environmental ethos are not mutually exclusive. CSFs, loosely modeled after CSAs (Brinson et al., 2011) represent a shifting production system that values the ecosystem as whole (McClenachan et al., 2014) and creates markets powered by what the ecosystem can provide instead of historically unsustainable preferences (Olson et al., 2014; Stoll et al., 2015).

Community non-profits and advocacy groups also play a role through education and community engagement. Events like Seafood Throwdowns – seafood cooking competitions hosted by the Northwest Atlantic Marine Alliance at farmers' markets and food festivals – teach the value of eating locally abundant, under-loved species and supporting local fishing communities. Moore (2012) points out that fisheries "are not merely dependent on ecology – they are dependent on design" (p. 673) meaning that seafood markets are more than resource extraction and monetary transactions – they are crafted and cultivated through relationships within the supply chain and with the ecosystem.

Theorizing Seafood in the Anthropocene

This reconceptualization of seafood systems takes place within the Anthropocene, the human-dominated geological epoch (Crutzen, 2002). While human civilization developed and thrived within a period of time known to geologists as the Holocene, human activities now alter ecological and geo-physical processes and redefine relationships with Earth systems during what some scientists propose to call the

Anthropocene. Steffen et al. (2011) refer to the Anthropocene as a "Great Acceleration" driven by developments in technology. They suggest that the Anthropocene may be natural (in that humans are natural life forms), but that our timing is out of sync with the rest of the Earth System. To achieve a more harmonized form of nature-culture, Westley et al. (2011) propose a top-down approach, using bureaucracies and institutions to harness the power of the Anthropocene for sustainable ends and to facilitate change. However, one of the Anthropocene's defining characteristics has been the marginalization and exclusion of local communities, especially those that rely on a functioning, healthy, sustained environment (Moore, 2016). Adapting "our culture to sustaining what can be called the 'world organism'" (Crutzen and Schwagerl, 2011) should mean including communities with intimate knowledge of ecological systems, not just those with power. It should mean redefining relationships between people and matching the requirements of natural and cultural systems – empowering communities as living systems – not establishing or reinforcing hierarchies.

Marine food systems are frontiers of conflict and complex socioecological relationships. They are material manifestations of the Anthropocene, of lasting anthropogenic change featuring dynamic associations between people, nature, and ways of understanding where our food comes from. Necessity, historical biases, political and commercial interests, conservation ethics, and cultural attachments to the ocean all drive seafood production, though often in divergent, inconsistent directions. Modern seafood systems, full of tensions and borders – overfishing, habitat degradation, stock collapse, (Pauly et al., 1998), and disagreement about what constitutes the best available science (Sullivan et al., 2006) – epitomize unstable and increasingly unsustainable ways of life.

Seafood production reflects interventions in natural processes that move well beyond our plates, impacting the physical and cultural world (Brandon et al., 2016). As western cultures and economies reshape natural processes, as we simultaneously invade, question, and (symbolically) separate ourselves from nonhuman life, now seems like a perfect time to explore (and hopefully improve) the future of seafood systems, the last wild place people depend on for food.

Why has seafood remained the last wild food source? Perhaps it is the ocean's unfathomability. Perhaps it is because most current cultural connections to the ocean are through food, consuming at a point in the ecosystem where environmental change is not always evident. Perhaps we cannot fathom influencing such a powerful, wild, vast space (Rozwadowski, 2005). Unlike popular perceptions of land, which many people think we can see and explore with controlled ease, the ocean is not our element. In some senses, it is unexplorable and unknowable. But thinking of fish as the last wild food is dangerous. It perpetuates the idea that the sea's bounty is limitless and that there is nothing we – as consumers and harvesters – can do to harm it. Failing to recognize that marine ecosystems are cultivated spaces, that seafood system function is correlated to preferences, limits the potential to reverse damage and make sustainable changes through our actions. If fish populations are truly wild (devoid of relationships with humanity), then seafood-dependent cultures only have two options: non-use or overuse (Cronon, 1996). But, if marine ecosystems are in fact cultivated spaces, then the seafood industry has the option to shape them in ways that are consistent with their historical and natural functions. Breaking the artificial border between wild and cultivated food gives wild food harvesters more agency over their harvests and the entire system. Harvesters can then be

part of the development of sustained system instead of part of a historical system that will soon be gone.

Some local seafood dealers, fishermen, and community organizers seem to be recognizing that the ocean is a cultivated space and that business models, in addition to regulation and management, can shape a sustainable future. Instead of using traditional hierarchies, they are collaborating to shift the focus away from cod, seeking appropriate substitutes and acknowledging that sustainability means an obligation to preserve and promote the capacity for wellbeing, not just a replication of past ecological and social conditions (Solow, 1991). Instead of fighting a losing battle to simultaneously maintain robust populations of historically valuable species and ensure fishing access to those species, the movement attempts to create opportunity for future fishing generations through diversification and market innovation (Brinson et al., 2011).

While past seafood preference studies have focused on the customer's role in shaping seafood markets (Cathy A Roheim et al., 2011; Wessells et al., 1999; Witkin et al., 2015), Olson et al., (2014) point out that many of the direct marketing arrangements reshaping seafood systems are driven by the fishing sector; customer demand is not the key to effectively integrating seafood into local food systems. This research compliments existing work that focuses on the varied logistical structures and goals of CSFs (Stoll et al., 2015) by exploring how stakeholders perceive their role within a sustainable seafood system. This thesis attempts to move beyond economic indicators of preference for participation in sustainable seafood systems (McClenachan et al., 2016) to determine motives behind that participation.

A positive feedback loop of mistrust that pits seafood fishermen, dealers, customers, and regulators against natural processes and each other perpetuates the unsustainable dynamics of the Anthropocene and could ultimately make it a short geological epoch. Switching triggers within the feedback loop, so each part of the system – individual, community, species, ecosystem – can thrive (Campbell et al., 2013; Stoll et al., 2015), depends on identifying connections between components and establishing measures of care that promote resilience and commensalism instead of competition (Tolley et al., 2015). Systems that value natural-cultural connections have a better chance of lasting into the future. Consumers within the local seafood movement are trying to show that seafood consumption can be a successful way to care for ecosystems and communities if food systems mirror natural processes, value community support, and strive for long-term sustainability through innovation and education. Therefore, it is important to understand the tastes, choices, and experiences that define how seafood consuming people, as components of the marine food system, interact with marine products and perceive their roles as drivers of change.

Research Questions

As stated above, the question that drives my thesis is this: In an era in which we are attempting to reimagine our processes of seafood production and consumption, how do the choices and perceptions of consumers – supply chain middlemen and individual buyers – regarding seafood systems simultaneously reflect and shape seafood production systems? The aim of this study is to contribute a better understanding of how the local seafood movement in New England uses human intervention and care for fishing

communities to foster a sustainable socio-ecological seafood system, by addressing the following research subquestions:

> *RQ1: What are the barriers to a more sustainable, equitable seafood system and how are seafood dealers working to overcome them?*
>
> *RQ2: What do local, direct-market seafood dealers and their customers value in seafood systems and how do those values translate to a more socio-ecologically sustainable system?*
>
> *RQ3: Who is responsible for creating sustainable change within New England's seafood system?*

While this thesis discusses the value of creating new dynamics within the local seafood system, it does not advocate for deregulation or claim community-based fisheries as a panacea for the region's food system challenges; effective management and conservation efforts are still crucial to protecting fish populations, essential fish habitats, and the people that depend on them. The goals espoused by CSFs and leaders of the local seafood movement enhance those efforts and make it more likely that fishing can remain a viable livelihood in New England. Answering these questions in can help situate the burgeoning field of sustainable seafood studies within the context of human intervention in marine production systems. New England's long history of commercial fishing, long cultural memory of its importance, and current trend toward innovative, community-based seafood systems is an ideal platform for understanding how fishing communities and ecosystems might survive and thrive in the Anthropocene.

CHAPTER 2: METHODS

The research conducted for this thesis was qualitative, using a combination of semi-structured interviews with seafood dealers, who I consider key informants, structured interviews with seafood customers, and participant observation at food festivals, farmers' markets, and food-centric community events (Table 1). Combining methods made it possible to elicit a holistic narrative of relationships between market groups.

Semi-structured interviews have been shown to work well with business managers – people who are accustomed to an efficient use of the their time – and respondents for which there is one chance to conduct an interview (Bernard, 2012). Both groups of respondents fit those criteria. Semi-structured interviews are also effective because they allow the researcher "to explore respondents' opinions, clarify interesting and relevant issues, [and] elicit complete information…within each interview" (Louise Barriball and While, 1994). Participant observation was used to contextualize interview responses and develop an understanding of how customers interacted with their seafood vendors without being obtrusive (Bernard, 2012). Participant observation also provided context for the stated preference of customers. Conclusions drawn from stated preferences have come under scrutiny (List and Gallet, 2001) because respondents often overestimate the values they assign when asked to make choices in hypothetical situations (Balistreri et al., 2001). Participant observation allowed comparison between stated preferences and actions of customers which, hopefully, painted a more accurate picture of the market.

Interview responses from both groups were used to understand how connections between customers and producers and species in this alternative way of conducting

seafood business supports markets, communities, and ecosystems. Members of the local seafood movement were targeted because they seem most likely to think practically and critically about relationships with marine food, and their role in social, economic, and ecological dynamics of seafood systems. It was also important to engage multiple groups within the supply chain, instead of focusing solely on consumer preference as the driver of change within food systems.

Table 1. Data sources and collection methods

Data source & location type	**# of sites**	**Data collection method**
Seafood dealers at CSF headquarters	4	Semi-structured interviews with open ended questions
Seafood customers at farmers' markets	51	Semi-structured interviews with open ended questions
Seafood Throwdowns and farmers' markets	8	Participant observation

Seafood Dealers

Interviews with four New England based seafood dealers were used to understand shifts in the "traditional" supply chain, relationships between dealers and their customers, and how direct-marketing and community supported fisheries businesses view themselves as actors of sustainable change within the local seafood movement. Respondents were all owners/operators/managers of their respective businesses. Each had intimate knowledge of New England's seafood system. They are all active members of LocalCatch.org and the Fish Locally Collaborative, dynamic networks of fishermen, (sea)food businesses, community organizers, scientists, students, and policy makers that work to form equitable, socially, and ecologically sustainable seafood systems across North America. Two dealers were former commercial fishermen, and one had previously

worked on a shellfish aquaculture operation in Maine. The co-owner of the fourth CSF was a recent college graduate and food systems advocate with experience in the restaurant business who had partnered with a local fisherman to sell fresh fish in northern New England.

According to LocalCatch.org there are seven community-based fisheries operations, with more than two distribution locations, that operate under its Core Values (Table 2; Appendix I). These values were collaboratively developed and agreed upon by multiple stakeholder groups within the local seafood movement and espouse an ethos of social responsibility and ecological sustainability. Of the seven businesses, four participated in the study; one was overlooked during background research, one was purposefully excluded due to logistical challenges, and one declined to participate. Though community-based seafood businesses are growing in popularity, there are few effective CSF operations in New England. The four businesses included in this study are active, vocal members of the local seafood movement and were enthusiastic about participating in this research.

Interviews with three seafood dealers were conducted at their places of business in Rhode Island, Massachusetts, and New Hampshire, and one interview occurred at the home of owner of a CSF. Interviews with seafood dealers lasted 30-45 minutes and were digitally recorded with the informed consent of the respondents. They were semi-structured, with open-ended questions with occasional prompts to expand on answers. Pseudonyms were used for confidentiality reasons.

Table 2. LocalCatch.org Core Values were used to identify seafood dealers for this study

LocalCatch.org Core Values
Community-based fisheries
Fair access
Fair price
Eating with the ecosystem
Traceable and simple supply chains
Catch and handle with honor
Honoring the ocean
Creativity and collaboration

Seafood Customers

Interviews with customers were conducted at farmers' markets, permanent seafood markets, and Seafood Throwdowns in New Hampshire, Massachusetts, Rhode Island, and Connecticut. Interviews with farmers' market customers consisted of five short, open-ended questions about seafood buying habits and their relationships with community supported fisheries. No identifying information was recorded and responses from these interviews were recorded, verbatim, by hand. Following data collection, responses were transcribed and indexed based on key themes identified throughout the research process.

In total, fifty-one customers from three of the businesses were asked five questions in two to five-minute semi-structured interviews. Answers to these questions revealed perceptions of local direct marketing initiatives and the transition to a seafood diet featuring underutilized species, as well as how they perceive their role in the seafood system. Interviewing farmers' market visitors proved challenging; many declined to participate in the study. However, overall responses were relatively similar and I am

comfortable that enough interviews were conducted to cover a broad range of existing perceptions.

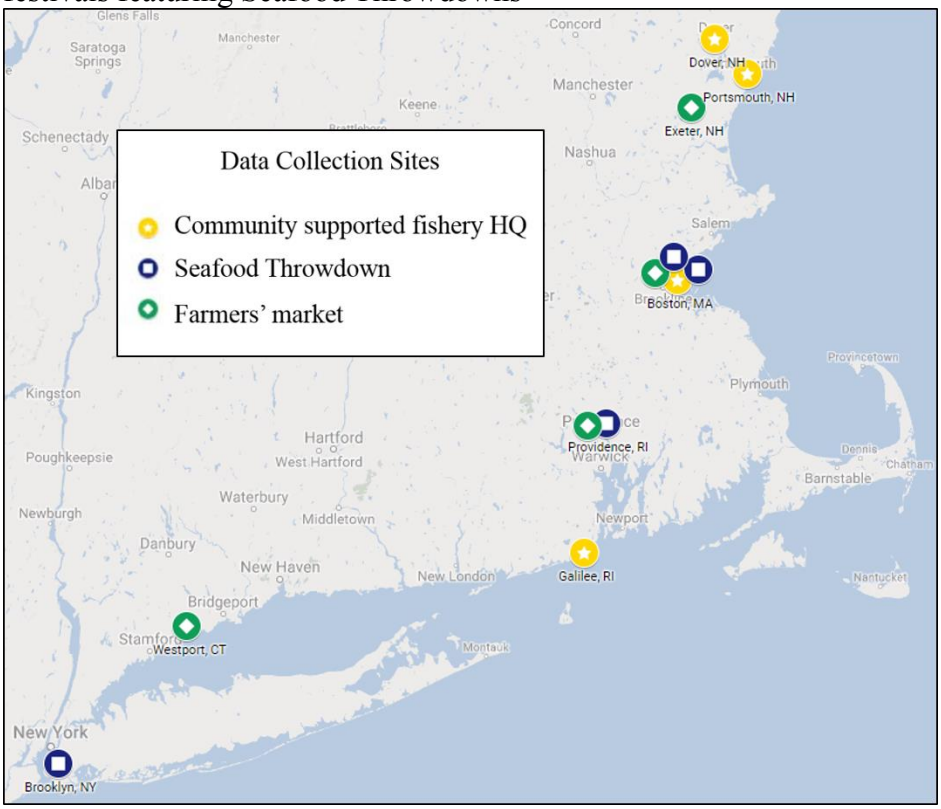
Table 3. Seafood customer interview questions

How important is variety in your seafood diet?
What is your favorite seafood to cook at home? What is your favorite seafood to eat at a restaurant?
Do you ever buy/use the whole fish? If you use the whole fish, what type of fish and how do you cook it?
Why do you buy your seafood from this CSF?
Do you buy seafood – to cook at home – anywhere else? Is yes, where?

Participant Observation

Participant observation took place at three Seafood Throwdowns – one at a farmers' market and two at community food festivals – a permanent seafood market, and a farmers' market (Figure 1). During participant observation sessions at public seafood events I took detailed notes on the surroundings, the atmosphere of each event, and the actions of visitors. I focused on interactions between customers and seafood dealers or community organizers, depending on the event. At farmers markets, I acted as a patron, occasionally engaging customers and vendors. During the participant observation sessions at Seafood Throwdowns I took a more involved role as a guest judge and event organizer.

Figure 1. Map of data collection sites. Seafood dealer interviews took place at Community supported fishery headquarters; customer interviews took place at farmers' markets; participant observation took place at farmers' markets and community food festivals featuring Seafood Throwdowns



Research Method Justification

Previous studies have evaluated consumer roles in seafood systems by quantifying customer preferences though choice experiments and stated preference surveys (Johnston and Roheim, 2006; Myrland et al., 2000; Cathy A. Roheim et al., 2011; Witkin et al., 2015). Though valuable insight, choice and preference experiments do not always consider the broader context of seafood choices or acknowledge external social factors that may drive choice. Choice experiments and stated preference surveys are also hypothetical and do not always reflect a respondent's actual actions. It was important to use observational methods to observe and question perceptions during transactions and identify real-world motivations behind specific actions. Interviews paired with

observations that occur while patrons are making their decisions and buying fish provide context sometimes missing from choice experiments.

Though I aim to take a more relational approach than previous studies that employ choice experiments to explore seafood preferences among a single consumer group (Johnston and Roheim, 2006; Myrland et al., 2000; Cathy A. Roheim et al., 2011; Witkin et al., 2015), I do give up some capacity for holistic understanding of community-based fisheries by prioritizing customers and seafood dealers over harvesters. CSF managers and their customers are well situated to think critically about their roles within the seafood system, especially since the two groups interact so closely within the local seafood movement. Though fishermen are obviously a crucial part of the local, sustainable supply chain, success of community-based fisheries hinge on effective relationships and a short supply chain between fishermen and seafood dealer and seafood dealer and consumer. Lacking the capacity to include fishermen in this study, due to time constraints and lack of funding, I felt it was more important to focus on the businesses that are reshaping markets and providing opportunities for harvesters and consumers to act more responsibly.

CHAPTER 3: FINDINGS

Seafood Dealers

Seafood dealers provided the most extensive information included in this study. This is possibly because, of the participant groups, the dealers that participated in this study are more knowledgeable about the seafood system issues than their customers. There are two likely two reasons for that knowledge gap. First, each seafood dealer had previous experience as a commercial marine harvester. They have developed local ecological and social knowledge as harvesters and can therefore think about seafood system issues from multiple perspectives. Second, as middlemen, seafood dealers interact with multiple market groups – fishermen and customers – and can provide insight based on interactions with those groups, whereas customers generally interact directly only with their seafood dealers and food festivals play only a small role in the market. Though each component is essential to a functioning market, seafood dealers link the supply chain together.

Several themes and ideas were consistent across each interview: a) barriers to developing a sustainable, equitable seafood supply system b) the role of local seafood dealers and their customers in sustaining marine food systems and communities; c) definitions of sustainability within their seafood system. These themes, along with the sentiment that social, cultural, and market interventions have altered food systems and are required to reshape them, fit well within discussions regarding the future of the Anthropocene.

Seafood Dealer Profiles

Four seafood dealers in three New England states, each with their own distinct personality, history, and business structure (Table 3), are driven toward the same goal: a seafood supply chain that supports local fishing livelihoods within resilient ecosystems. Allison (a pseudonym), the manager of a community and restaurant supported fishery in Portsmouth, New Hampshire knows that supporting "the remaining commercial fishermen in New Hampshire – of which there are only eight – as well as other local fisheries, such as scallopers and oyster farmers" is essential to the long-term viability of her business. Her mission "is to promote…underutilized fish and the fishermen themselves, while offering them an incentive [to fish sustainably] for every pound of seafood [the CSF] buys." For her business to do well, local marine harvesters need to survive, and hopefully thrive. As a two-person business, she does not have the capacity to compete with larger seafood suppliers that favor quantity over quality while neglecting the needs of their fishermen. So, to remain viable as a seafood dealer, Allison differentiates her business by focusing on strong community connections, transparency, and a system that cultivates the ocean as sustainably as possible.

Table 4. Business parameters of four seafood dealers in New England

Location	***Scale***	***Customer base***
Boston, MA	*~30 million lbs/year*	*Farmers' markets, wholesale buyers, institutions, restaurants*
Portsmouth, NH	*~800 lbs/week, 600 customers*	*Farmers' markets, weekly catch shares, restaurants*
Dover, NH	*~100 thousand lbs/year, 20-30 restaurants*	*Wholesale buyers, restaurants, schools*
Galilee, RI	*9 farmers' markets*	*Farmers' markets, weekly catch shares, restaurants*

In Boston, Massachusetts, the goals of Jon's community-based seafood business are similar to Allison's, though as a much larger company his business model is different. He sells around 30 million pounds of local seafood each year by figuring out how to "build scale around supply from small boats with a good story." He is in the business of matching supply to demand and creating demand for a supply of fresh, locally abundant species. That means asking fishermen to catch what is locally available – rather than what customers think they want or what normally brings in the biggest payday (typically cod, tuna, and salmon) – and to trust him to provide eager an eager clientele. Jon made it abundantly clear that he believes that community-based seafood operations are necessary to the survival of New England's seafood industry.

> What I also think is intuitive but is worth saying is that we believe in supporting these smaller boats because we believe that its more ecologically friendly way to fish; it's important to the health of our community, it's the fabric of our culture, in all coastal communities. And it's almost by definition a higher quality fish.

Effectively matching supply to demand means that he can cut down on waste within the system and find markets for more fishermen and a wider array of species.

Further south, in Point Judith, Rhode Island, another community supported fishery provides local fish to customers at nine farmers' markets in Rhode Island and Connecticut, sourcing from boats out of Galilee harbor, jokingly referred to as the parking lot for Block Island, a local summer tourism destination. Captain Clark was a commercial fisherman for 40 years, but with "the regulations and quotas…it got harder and harder to make a living. So, I started to diversify, selling to restaurants directly" instead of going through a longer supply chain, which cost money. Though restaurant sales proved to be a "major nightmare with the health department," Captain Clarke was able to transition the business into a fully licensed processing facility on Galilee's docks.

As is common with other CSFs, Captain Clarke works with as many fishermen and wholesalers as he can to create a diverse menu of species that he sells at farmers' markets and in the CSF's weekly seafood baskets, bought in advance by customers. When I asked him what factors he considers when deciding to buy fish at the docks he responded:

> That's what makes our business model so successful. We don't have an inventory. We go with whatever we can get. This week we scored a bunch of scallops from George's Bank. Boom! Right in my newsletter, that's what we're running with. And that's kind of how it happens. It's like fishing.

Back in New Hampshire for my final seafood dealer interview, I arrived in time for a dinner of locally caught Bluefin tuna at Abigail and Sean's house. Abigail is the co-owner of the business along with a local fisherman. In addition to running the business, both spend days at sea reeling in pollock using hand gear. Unlike the other dealers, they are a restaurant supported fishery, sourcing to fifteen to twenty restaurants in New Hampshire and eight in Vermont. Like the other seafood dealers however, their business revolves around direct discussion with fishermen about what they need, financially, to sustain their livelihoods. That discussion reflects challenges faced by fishermen – from stringent regulation to changing ecosystems – and is reflected in set pricing that gives their fishermen confidence that they can consistently earn a fair wage.

Barriers to a sustainable food system

The seafood dealers I spoke to identified several challenges to creating a sustainable paradigm within seafood systems. Three related and intertwined obstacles, which combine to create marine monocultures, an imbalanced system, and resistance to change, stood out: a) Historically poor relationships between harvesters and dealers; b) lack of knowledge among customers; c) historical species bias. The challenges created a

need for new markets that could more effectively embrace long term socio-ecological goals within fishing communities. Each dealer expressed a willingness to help create that change, a sentiment supported by their business models that incorporate community values and active attempts to restructure demand to fit within sustainable socioecological conditions. They are constantly working to find innovative solutions to barriers that cause seafood markets to continually degrade marine ecosystems and keep markets from benefiting local fishing communities.

Jon explained that his whole business revolves around building a stronger fishing community by reworking the fisherman-dealer relationship, one that has seen fishermen ripped off by dealers for generations. "I don't know where it comes from…Luckily or hopefully I don't have this issue where fishermen hate fish dealers." Each dealer pointed to their strong rapport with fishermen as a reason that the community-based system functions and recognized that tradition of mistrust between the two groups challenged efforts to buck the status quo.

In addition to tension between market participants, Jon's frustration with the way seafood systems have operated partially stems from an uninformed customer base and a lack of variety in the market. With over a decade in the seafood industry, as a harvester and dealer, he has first-hand experience with marine monocultures and historical biases toward seafood. According to Jon, most customers that buy seafood are "getting ripped off."

> Consumers want fish, but they want a certain type of fish. But there's not enough of that, so the price is going up and up and up and I'm pulling my hair out. I'm constantly looking for the common denominator, like where did this [bias] come from? My conclusion is consumer bias that was influenced by my predecessors in the industry.

Creating preference bias among customers was not malicious or necessarily intentional, but it has had lasting effects. Jon feels that one reason popular fish have remained in high demand is an institutional memory that does not account for technological advances. Jon's company operates twenty refrigerated trucks and many of his fishermen pressure bleed and flash freeze fish onboard their boats, yielding high quality products at the point-of-sale, even days after catch. But he explained that before modern refrigeration, markets favored cod and swordfish because they could withstand poor refrigeration and still maintain quality. Meanwhile, scup and mackerel, which need proper refrigeration, had a short "biological shelf life," were harder to sell, and became known as trashfish. In his opinion middlemen in the supply chain have done nothing to correct this.

But that is changing with the rise of CSFs. The week before the interview with Allison, she sold dogfish, a species considered to be bycatch or trash fish by many commercial fishermen, to over 550 people. She explained that many of her fishermen do not eat them; "it's just not in their psyche as being an edible fish." She remembered a conversation with a local fisherman about dogfish in which he exclaimed "Jesus Christ, we used to throw that overboard!" Cod are still the preferred and valuable catch.

> But according to Jon: cod are not sexy if you've never heard the word cod before. Cod are so ugly, but I realized I thought they were beautiful because that was my mortgage payment, my rent check. It was beautiful because I was like, phew, I'm going be getting a day's pay today. It became the most beautiful thing in the world to me.

Highlighting the influence of relationships within New England's seafood system, several dealers remembered customers that expressed skepticism about less valuable species, like dogfish, scup, and sea robin, because they had heard fishermen make disparaging remarks about them when they were young.

The Role of Dealers: Cultivating a New System Through Community Support

A consistent theme connecting each seafood dealer was the value of healthy relationships within the seafood community. In addition to turning profits, they emphasized that fostering community connections should be a primary goal of responsible seafood dealers and advocates of a sustainable seafood system. Jon recognized that businesses like his are responsible for keeping seafood systems running efficiently by capitalizing on emerging opportunities. His company works to shorten supply chains, matching fishermen and their products to buyers in as few steps as possible.

> We're face to face on the docks, but then we're also aggregating their product in Boston and trying to match that supply to demand all over the world. The more efficiently we can match supply and demand the truer we can get that price. We can work efficiently and return [fishermen] more money for their fish and hopefully they can grow their businesses, support their communities, grow their families. That's what it's all about for us.

Like Jon, Allison makes decisions that she feels are good for her business, local fishermen, and her customers. With close to 600 members paying in advance for half-a-pound to two pounds of fish per week (around 800 pounds of fish per week), she "picks a species that [fishermen] are catching in abundance…Occasionally customers will get cod and haddock, but they're mostly getting other underutilized species," like monkfish, hake, a variety of flounders, redfish, and dogfish, along with weekly 'add-on' choices of fresh shellfish and lobster. When customers pay up front for products from a community supported supply chain, they give up a measure of control over the products they receive. Customers that put their faith in Allison to consistently supply fresh, local, equitably harvested seafood, free up fishermen to chase what is abundant, knowing they will make money.

Establishing a featured fish each week subverts the mainstream seafood supply model – which favors a small variety of popular species at all times – by ensuring diversity within seafood system while considering the capacity of local fishery. “I try to share the wealth with each fisherman. I try to move around how I buy and who I buy from to keep everybody equal, to buy from each fisherman the same number of times per year.” Her supply system will not work if she favors one boat over the rest because individual fishermen in New Hampshire do not land enough fish to consistently supply all her customers.

When I arrived in Portsmouth for my interview with Allison, her assistant manager asked for my patience as they dealt with a “fish emergency.” The day before, the chef of a local seafood restaurant and regular CSF customer had requested spiny dogfish so he could serve and impress a high-profile journalist with a local, underutilized species. Somewhere between processing and delivery to the restaurant the twenty pounds that Allison had purchased from a local fisherman went missing. She had already paid for the fish and was expecting payment from the restaurant. Throughout the interview Allison fielded text messages and phone calls from the chef, fisherman, and processor trying to locate the missing fish or come up with an adequate replacement. Though clearly worried about losing money on this single transaction, she seemed more concerned with maintaining a close, efficient relationship with each of the components in the supply chain. She even considered buying dogfish from a competitor so the chef could serve it and the journalist could tell a compelling story about New Hampshire-caught seafood and the local supply chain. Following the interview, after escorting me to one of her delivery sites in a local park, she went down to the docks with two six-packs of Dogfish Head beer

to thank some local fishermen for a great summer season, an effort to maintain and grow connections that keep her and her fishermen in business.

"As a multi-stakeholder cooperative – which means fishermen and [customers] are shareholders within [the CSF]" – Allison's business is in a unique position to foster relationships and community connection. "The whole idea is that [each group] is getting the services and benefits of a cooperative by being shareholders." In this short supply chain, where fishermen receive "an incentive of $0.50 per pound over daily auction prices to sell fish to [the CSF], and members of course are getting full transparency – know your fisherman – and the nostalgia of being able to connect to the boat or the dock or the landing port through…a great, fresh product," both groups benefit from the other's interest in a shift away from the large-scale, convoluted supply chains that dominate the market.

Feedback from her shareholders, fishermen, and customers validates her belief that community connections can drive business. An annual survey, conducted by the CSF, showed that only twenty percent of shareholders were looking for a dividend when they invested in the company; the rest bought stock just to support the cause and the community. She told me that her fishermen are, "proud that their fish is in restaurants; they are in awe that restaurants are ordering these underutilized fish" and that customers seem excited about eating something other than cod. In addition to buying local species, restaurants support fishermen by displaying the fishing boat and captain's name, which connects each step in the supply chain, from boat to plate.

Jon also believes that community support is both necessary to his business and a positive consequence of his business model.

> Not a day goes by when we don't buy at least one fish from somebody. Or like ten pounds of razor clams that the guy just dug out with his hands – doesn't even have a boat, just drove his truck to the flat – and that's important to us. Even if it's just a $25 check, that's real money back into a family in our community and that's real food nourishing people.

As a self-proclaimed "entrepreneur from birth," Jon's experience as a commercial fisherman in Alaska and New England, and his "love for nature and the ocean and fishing…the romance in catching fish and feeding [his] family and community" motivated him to provide this "service to small-boat American fishermen [with a] mission to sustain their livelihoods by maximizing their profitability." Though Jon operates a relatively large-scale business compared to many CSFs in the region, by maintaining similar values he supports small-boat fishermen and promotes a diverse seafood diet. For him to achieve his goals "there needs to be a positive, collaborative trusting relationship" between the fisherman and seafood dealer, which translates to trust by customers in the entire system.

During the interview he received a text from one of his fishermen saying that, if it was easier, Jon could send the check for their most recent transaction later in the week because he was going camping with his family for the weekend and would not need the money right away. Ten years ago, Jon would deposit the check, in-person, into this fisherman's account at the bank on the day of the transactions just to gain his trust. Today, the same fisherman texts Jon pictures of his kids and trusts him to hold up his end of the bargain.

Defining sustainable seafood

But how do these businesses develop trust when the established system includes

variable definitions of seafood sustainability that often ignore fishing communities? Two key themes stood out as metrics of sustainability for seafood dealers, their fishermen, and their customers: a) promotion of adherence to fishery management regulations; and b) stakeholder education. Ideally the definition of sustainability used by CSFs can highlight both the importance of buying locally and supporting fishing communities while incorporating the positive aspects of fisheries regulation – reasons they are beneficial to fishing communities and ecosystems.

Relationships between seafood dealers and fishing regulations are complex and somewhat tenuous. Allison, who sees herself as more of "fisherman advocate," told me early in the interview, "I'm not a big fan of the National Marine Fisheries Service, and I'm saying it publicly!" She partially blamed the decline of New Hampshire's fishing community on the stringent regulations that forced small-boat fishermen out of the industry. Captain Clarke stopped fishing because regulatory costs became too high. But both are keenly aware of the necessity of fisheries management and work hard to sell fish that has been caught legally and reported appropriately. In fact, each dealer emphasized the importance of regulatory compliance, despite immediate negative impacts on fishing communities.

> One challenge Jon faces is: a high fixed cost for each transaction because of regulatory compliance. That comes from a good place. It comes from both consumer health concerns, which is something we all care about, and it comes from sustainability or renewability of the resource – resource management. It costs money – I report every pound of fish I have to the federal government.

When I asked Captain Clarke what makes his seafood sustainable he told me that his customers ask the same thing.

> Occasionally, when articles come out in the paper saying codfish are in danger, we get a little bit of grief from that, but when [customers] realize there's quotas to

> protect all that…They say 'what's sustainable?' Everything we have is sustainable. The feds have given us a quota, so we catch what we're allowed. We're not going out there and killing a species.

Adhering to regulations and harvesting according to what the ecosystem can provide is one form of stewardship. To offset costs of regulatory compliance, and to ensure a fair wage for fishermen, dealers must convince patrons to pay a premium for their fish. As such they believe that educational initiatives are vital to each of their businesses as well as a functioning, trust-based, sustainable food system.

Each seafood dealer explained difficulties selling certain species, with dogfish and scup leading the charge in the underloved fish category. Captain Clarke complained that people still ask him for salmon and tilapia all the time, highlighting lack of knowledge among customers. As a seafood dealer that religiously keeps those species out of his inventory, he thinks of his

> role at the farmers' market as more of an educator, to tell people what tilapia is and why they really shouldn't eat it. And that there is no local salmon. People don't know that. They're completely perplexed.

> Captain Clarke also observed that: a lot of the stuff – the dogfish, the skates, the sea robins – there is not a demand for it. There is a group of people that say 'oh I'd love to eat with the ecosystem'…once or twice. Then they just get scallops. You could go [to the market] with scup, sea robins, dogfish and you'd come back with most of it. There's a group of people that will try it a couple times, that's it.

Though he recognizes that he will not convince everyone that sea robin is just as tasty as cod, he hopes that by that providing fresh, high quality seafood paired with education, he can move the needle. For Allison, education and marketing sustain business while fostering community connections.

Educational material goes beyond ecological information about local fish populations and scientific metrics of sustainability. Part of the educational process is

familiarizing customers with the familiar flavors of unfamiliar species and highlighting connections within the community. She tries to teach customers that fishermen are their neighbors and deserve their support. Putting human faces on the supply chain, makes it easier to show that by supporting local, small-boat fishermen customers are also supporting a more ecologically sustainable food system. To her CSF members and shareholders, Allison sends out a

> weekly informational newsletter to let them know what the fish of the week will be, natural history, who the fisherman is, and give them recipe ideas. Some people have a difficult time with the price point on the more [ecologically] common fish like the dogfish and the pollock. My response will be: well, we're giving our fishermen an incentive on every pound, so remember for every hundred pounds [fishermen] sell to us they are getting $50 extra."

Allison added that it is "really important to get that visual out there and say 'look, this is a white flaky fish just like cod, you can cook it just like cod. Whatever recipe you can conjure up for cod you can replace it with dogfish.'"

Seafood Customers

CSF customers seemed generally eager to discuss their relationships with seafood and their seafood dealers. Forty-six out of fifty respondents were Caucasian, though age ranges varied. The observed demographic composition of CSF customers at farmers' markets in Westport, CT, Providence, RI, and Exeter, NH roughly reflected the demographic composition of all farmers' market visitors while the markets in Brooklyn, NY and Boston, MA, though still predominately Caucasian, were more diverse than CSF respondents.

Interviews revealed that their preferences were not as granular as I originally thought. Although I hypothesized that CSF customers would actively seek a more diverse

seafood diet, interviews did not indicate that seafood diversity and ecological sustainability were the primary factors driving customers toward CSFs. Consistent with past studies (Witkin et al., 2015), seafood customers indicated that they preferred historically valuable species (cod, haddock, salmon, halibut) over underutilized species (hake, skate, dogfish, monkfish, etc.) or those they were unfamiliar with. While some reported that they "liked the variety of CSFs and having to figure out what to do with something [unfamiliar]," many still identified cod, salmon, and tuna as their favorite seafood options, even though their CSFs were actively promoting underutilized species and did not always sell their favored options.

However, through observation of market interactions, it is evident that stated preference does not always match buying behavior. During a participant-observation session at Jon's permanent fish market location in Boston, I noticed that most customers purchased farm raised salmon, a relatively recent addition to the business's menu, along with halibut and tuna, historically popular species in the United States. In three hours of observation, few customers purchased black seabass and none bought Atlantic mackerel, two locally underutilized species on sale that day. It seems that when staples are available, customers still gravitate toward them. But the absence of these preferred species did not deter customers from patronizing CSFs.

Shifting dynamics and relationships in the system, rather than shifting menus, seemed to trigger buying decisions. When asked why they patronized CSFs, some respondents answered in the context of other seafood markets; they did not trust seafood sold at super markets or bulk stores. The method of seafood sales has become more important to them than the types of seafood they buy. This is especially evident with

customers participating in weekly-share program, as they give up decision making control in their purchases, opting to trust their seafood dealer. Respondents also commonly answered that 'freshness' and 'quality' played an important role in their decision to buy seafood from CSFs instead of larger fish markets or grocery stores. Those two, non-species-specific adjectives were used more frequently than 'variety' or 'sustainable,' which may refer to specific products (Table 5).

Table 5. Adjectives used when customers where asked: Why do you buy seafood from CSFs?

Seafood adjectives	**# of times mentioned by customers**
Fresh, quality	41
Variety, sustainability	9

Additionally, though I hypothesized that CSF customers would actively seek out variety within seafood markets, diet diversity was a polarizing topic. When asked about the importance of a diverse seafood diet, responses ranged from "not important" to "very important," with some respondents indicating that while "variety is important in theory," and that, while they would like to be more adventurous, they find themselves buying the same thing every time, or settle on familiar species because of their partners' preferences (Table 6).

Table 6. Customer responses when asked: How important is variety in your seafood diet?

Importance of seafood variety	**# of customers**	**Representative quotations**
Not important	20	I mainly stick to staples, like cod and salmon
Important in theory, but not practiced	8	I like variety but my spouse doesn't, so we are somewhere in the middle. We usually just buy swordfish
Very important	23	Variety is very important. This experience, with a CSF, has made me more adventurous

Though customers ranged from relative seafood novices to experienced, adventurous seafood lovers, and offered varying reasons for purchasing seafood from CSFs, trust in the seafood dealer was a shared theme through many of the interviews. As opposed to large grocery stores, customers emphasized that they *know* that fish sold by CSFs is fresh and local. (One customer admitted that they assumed it's fresh and local, but then considered that assumption and said, "but I should probably ask.") Respondents indicated that friendly, knowledgeable vendors are a crucial factor in developing knowledge that CSF products are of the highest quality and make asking "stupid questions about seafood" more comfortable. They also reported that CSF vendors often offered up "good preparation tips and recipes, which helps [them] pick something new" and were good at "getting [them] to try fun new things."

Though few responded that ecological sustainability was a main motivation to buy from CSFs, customers seemed aware that their seafood buying decisions had an impact on natural-cultural systems and many trusted that their fish was sustainably harvested. Most important to the customers was a commitment by the CSF to local fishermen. They wanted to feel connected to the source of their food. One customer commented, "even though I don't *know* the fishermen, it makes me feel a little more connected." Several customers identified community support and cohesion as an aspect of sustainability often missing from "mainstream" sustainability initiatives featured by grocery stores. Three CSF customers, when asked why they buy from CSFs mentioned the value of eco-labels, explaining that origin labels, more than sustainability labels, gave them confidence in their seafood. "Seeing where [seafood] was from and who caught it" was more important. Knowledge that fish was from New England and caught recently,

within a transparent supply chain, seemed to be a proxy for a specific national or international sustainability certification.

Community Seafood Events

Seafood-centric community events are playing a growing role in the local food movement as they attempt to bring potential customers, fishermen, chefs, and seafood dealers together in a low pressure, educational space, instead of a market setting. The Northwest Atlantic Marine Alliance (NAMA) uses cooking competitions as educational opportunities. Seafood Throwdowns tackle a diverse array of ecosystem and food justice issues that threaten local fishing communities and present opportunities for the future.

While CSFs seemed socially homogeneous, featuring an affluent, majority Caucasian customer base, Seafood Throwdown audiences and participants were much more ethnically diverse. At each of the Throwdowns at least one of the chefs was a person of color and most of the judges were people of color. At a Seafood Throwdown during the Boston Jerk Fest, members of the local Caribbean community spoke about how important locally underutilized species, like scup, already are in their community.

Though the events seem to target customer seafood buying behavior, they can also impact the behaviors of chefs and harvesters. NAMA brings educational material about their work with fishermen and employs an emcee to excite and educate the crowd. They also recruit marine harvesters to bring whole fish, which gives chefs an opportunity to work with something new and teach visitors how to properly prepare seafood while minimizing waste. Food festivals and cooking competitions at farmers' markets serve as ideal platforms to convince seafood market participants that collaboration and an ethos of

social equity and ecosystem health are necessary to sustaining fishing in New England.

For example, a Seafood Throwdown in Providence, Rhode Island, brought together the entire supply chain for one local seafood product. A local clam digger delivered the mystery seafood ingredient – slipper snails, an underutilized but abundant limpet found in Narragansett Bay – to Providence-based chefs who prepared innovative dishes for curious farmers market visitors. One of the highlights of the event came when the local harvester and I convinced a group of children to try to limpets straight from the shell, raw. Skeptical at first, they were soon convincing their friends to be adventurous. Everyone also seemed to enjoy the slipper snail dishes prepared by the chefs and seemed excited to search for them in local seafood markets and cook them at home. When the NAMA event organizer explained that slipper snails were not sold commercially in Rhode Island, several attendees expressed an interest in asking for them at local seafood markets. Visitors told me that meeting the harvester, a young man born and raised in Rhode Island, made them feel more connected to the dishes prepared at the event. It was also an opportunity to demonstrate how short seafood supply chains can be.

Though no raw seafood was consumed at the other Seafood Throwdowns I attended, the presence of whole fish consistently excited crowds. At each event children and their parents crowded around display cases with cusk and scup, asking questions about their lateral lines and life histories. Visitors also gathered around cooking stations, watching closely as chefs broke down the fish and attempted to use the whole animal in their dishes. Though some still seemed skeptical of cleaning and filleting and whole fish at home, others expressed excitement at the prospect of cooking whole fish.

While the Throwdown in Providence emphasized the importance of short supply

chains and knowing your fisherman, the event in Brooklyn demonstrated a more common version of local seafood supply chains, since customers and chefs rarely interact directly with fishermen. Instead of bringing a local fisherman to New York City, NAMA organizers stressed the value of supporting local businesses that work directly with fishermen to build community cohesion into their business models. The fish at the Brooklyn Throwdown was sourced from a CSF that was also selling fish at the farmers market a few stalls away. After receiving a crash course in sustainable seafood at the Throwdown, some visitors proceeded to the CSF's stand, turning education into action.

A central tool used by event organizers was emotion. At each event, NAMA staff, chefs, and fishermen told the audience personal stories about the impact that of a community-based seafood supply chain. The limpet harvester told a small group of visitors how surprised he was that NAMA had called to ask him to collect slipper snails for the competition. As a clam digger, his only real use for the abundant mollusk was as a mid-day snack. He told them that since slipper snails are so prevalent near clam flats he would be thrilled if he could find a regular market for them. His presence and stories provided concrete evidence to his audience of the challenges he faced and the opportunities that responsible, curious customers could provide. In turn, he seemed motivated by the children sucking limpets straight from the shell.

CHAPTER 5: DISCUSSION

Role of Middlemen in the Local Seafood Movement

Seafood dealers – middlemen between fishermen and customers – are in a prime position to drive sustainable, diverse seafood supply chains and support fishing communities. They are responsible for keeping local seafood systems running efficiently and capitalizing on emerging opportunities. While market transitions may start with ecological or fishing industry conditions (i.e. climate change, over exploitation, or new regulations) that alter historical harvests, fishermen, who must adhere to fishing regulations, are relatively powerless to initiate change in target species. As one dealer succinctly put it "fishermen don't have any time" to determine the direction of the market; they are focused on fishing and who is going to pay them the most for their fish. Meanwhile, individual customers lack the education and awareness of available options necessary for change as they focus on finding fish that they like for the best price (Johnston and Roheim, 2006), and therefore preferences for historically valuable species maintain market directions.

Seafood dealers, on the other hand, interact directly with customers and harvesters, giving them leverage to dictate market directions. They can gauge preferences and set prices according to several factors – customer preference, species abundance, fisheries management regulations, and processing cost, among others – as well as encourage fishermen to cultivate marine ecosystems in a specific manner. For that reason, Kaplan (2000) suggests that, in certain situations, market influence should be monitored for equity between groups; in some markets conditions may skew market power toward one group in a supply chain, negatively impacting others. However, if LocalCatch Core

Values are adopted and maintained, equity should persist throughout the supply chain without constant oversight.

Recently, the role of middleman has been redefined from distributor to that of a more active stakeholder with a role in identifying exchange opportunities and product design (Snehota and Gadde, 2001). Snehota and Gadde (2001) further suggest that a middleman's role, contrary to a fisherman's or a customer's, is malleable, changing based on market and social conditions. Indeed, middlemen in the alternative seafood markets, like CSFs, have taken on several different roles, depending on the needs of their community. Though middlemen have been categorized as "a dying remnant of a less efficient time," they have potential to serve a coordinators for the entire supply chain, making it run more efficiently(Arya et al., 2015). Arya et al. (2015) found that when competing interests create friction within supply chains, further dis-integrating the supply chain, creating another step from producer to end consumer may alleviate that friction. Middlemen can link fishermen to external markets "thereby reducing the time and effort need by producers to market their goods" (Crona et al., 2010; p. 762).

CSFs can play that role by finding a balance that meets the needs of harvesters and customers. However, for intermediaries to be successful, they must also provide value to their business partners. With quickly developing market systems that adapt to changing conditions – ecological, social, regulatory, economic – the ability to be flexible and provide a number of different services creates value (Olsson et al., 2013). As previously discussed, CSFs provide a range of services, including distribution, processing, marketing, supply chain coordination, and customer education (Bolton et al., 2016). While Arya et al. (2015) argue that contracts can make the supply chain more

efficient, the community-based seafood businesses in this study show that a core set of values, adopted by each participant in the supply chain, can also increase efficiency. The key is applying those values in a way that is most efficient for the given community and ecosystem.

In New England, seafood dealers hold a large measure of responsibility for the type of cultivation within marine food systems. Unfortunately, that has often meant sating appetites for unsustainable species, at the expense of local fishing communities (Greenberg, 2014). But as stocks of popular fish species decline or fully collapse (Pauly et al., 1998), it makes sense that some seafood dealers have started to innovate within markets, exploiting marine food web diversity that yields abundant, locally underutilized resources to make oft-competing interests work together efficiently.

If we accept that marine ecosystems are cultivated spaces, like agricultural land, then we must also accept that the type of cultivation has consequences. Just as monocultural farming can have more severe impacts on nearby terrestrial ecosystems than farms that use diversified crop regimes (Altieri, 2009, 1999), fisheries that focus industrial scale pressure on single species can alter marine ecosystems more pervasively than diversified fisheries portfolios (McClanahan et al., 2015). But because the public continues to view fish as a wild food source, it is easy to portray fishermen as gatherers rather than hunters or farmers with agency over their harvests and target species.

Overcoming Challenges to Seafood Diversity

Historically in marine food systems, markets and regulatory pressures dictate the species that fishermen catch (Collette et al., 2011), which influences ecosystem processes

and population dynamics (Heino and Godo, 2002). However, Over the last ten-plus years, networks of fishermen, seafood dealers, and other seafood system participants have recognized the need for a new market system that changes cultivation dynamics. Recently, seafood dealers have taken the initiative to design new business models that promote marine food cultivation more consistent with natural-cultural systems (McClenachan et al., 2014). Seafood dealers can influence cultivation on two fronts: by providing markets for fishermen to chase diverse harvests and by providing more information and options to their customers to cultivate new tastes and preferences.

Economic studies have shown that price, taste, convenience, quality, and environmental impact, among other factors, influence preference (Myrland et al., 2000). But Holocene tastes may be limiting Anthropocene markets. For over two hundred years, New Englander fishermen and seafood lovers were accustomed to catching and eating cod (Kurlansky, 1998). And though tastes have shifted and certain species have risen and fallen in popularity, many have risen singularly and fallen prey to overfishing (Grasso, 2008), leading to declines in stocks and ecosystem resilience (Neubauer et al., 2013) instead of expanding diversity within seafood markets. Though they may want to act in ecologically sustainable ways, research has shown that sustainability is relatively low on a list of factors that buyers consider when purchasing seafood; price and taste usually top the list (Johnston and Roheim, 2013).

But observational data suggests that stated preference and actual buying behavior are not always aligned. Despite identifying historically popular species as their favorites, customers enthusiastically bought underutilized species from seafood dealers in the absence of their preferred choices. This supports studies showing that respondents may

over-estimate the value their place on a good or service (List and Gallet, 2001). While price and taste may be key determinants of a purchasing decision, product characteristics are not the only factors influencing decisions; customers do not make choices in a vacuum. Incorporating relationships between customers and vendors, who have an opportunity to influence choices, into studies of food preferences, can emphasize malleable nature of purchasing decisions.

Convincing customers that pollock and dogfish are just as worthy of high prices as cod, halibut, and swordfish, which will be essential for the future of the local seafood movement (Witkin, 2014), is a challenge that CSFs try to overcome through education and community engagement at the point of sale. Despite technological advances that have created potential to shape new seafood markets, tastes have reflected static markets that have not capitalized on those advances. The term "trash fish" was coined because some species spoiled faster, making them risky target species (Ashie et al., 2009). But modern, quality refrigeration and processing technology is the rule among reputable fishing fleets (Ghaly et al., 2010) makes the argument that cod is superior to scup somewhat obsolete. Yet if individual consumers are largely unaware of the origins of their bias, abundant underutilized species have little chance to get out from under the moniker "trash fish" unless suppliers, those with influence in the market, work to change the system.

But biases and historical practices are hard to shake, especially when they exist at multiple stages within the supply chain. Difficulty with the price point is one reason and lack of familiarity with a more diverse, seasonal range of products is another. Before dealers can convince customers to pay higher prices for unfamiliar fish, they must first make customers aware of their existence. And to educate their customers, they must

convince fishermen, with years of experience engrained in livelihoods, to do something different. Not an easy task. And to educate their customers, they must convince fishermen, with years of experience engrained in livelihoods, to do something different. Not an easy task. An excerpt from The Environmental Magazine sums up the challenge that fishermen who buck trends face:

> For years, [Sam] Novello had made a decent living off the abundant groundfish – cod, haddock, yellowtail flounder – that he hauled up off the Atlantic Ocean floor. He used nets with a large-enough mesh size to allow juvenile fish to pass through, and worked the best spots sparingly with his tows. "I didn't know I was a conservationist until somebody told me," he says, "but I believed in only taking the interest out of the bank." But Novello watched many of his competitors make three times as much money depleting vast areas and keeping thousands of pre-spawning-size fish. And he has never forgotten the disdainful words of a local dealer: "What are you, stupid? One boat is gonna save every fish in the sea?" So, he adds sadly, "Finally I said, 'OK, I'll fish like everybody else does'" (Russell, 1996).

And even if fishermen are aware that the status quo puts them at a disadvantage, customers do not always recognize that the mainstream market often takes advantage of them by charging unreasonably high prices for low-quality fish (Miller and Mariani, 2014). For that reason education by for-profit businesses is a foundational element of sustainability within the local, sustainable seafood movement (Stoll et al., 2015). Educating customers about the benefits of a trust-based community-based food system draws them away from seafood businesses that act less-than equitably and toward a system that can sustain livelihoods and ecosystems into the future. In Jon's words: "I think when you start telling people that story…It's not just a bunch of do-gooders that want you to eat this trash fish or underutilized fish. And maybe that starts to resonate."

Contrary to systems of the past, in which dealers may have pressure fishermen to catch certain species, strong relationships and fueled by mutual respect, common values,

and supply chain transparency help CSFs balance ecological sustainability, community support, and profit-making. Within the local seafood movement and networks like the Fish Locally Collaborative and LocalCatch.org, fishermen and seafood dealers have transitioned into stewardship roles, collaborating with environmental activists, scientists, and government managers that traditionally carry the torch of conservation (Griffin, 2014). CSF owners and managers realize the historical impacts of the seafood industry on New England and the benefits, particularly to ecosystems, of proper management.

But while fishermen can contribute local knowledge to the understanding of ecological conditions, which is generally determined through standardized scientific methods (Haenn et al., 2014; Hartley and Robertson, 2009), it is outside the capacity of their livelihoods to fully define ecological sustainability. According to Captain Clarke "when you are 100% fishing, you are just looking at the money. Who's going to pay me the most for my fish, that's where I'm going to go." However, others realize that relationships between fishermen, their harvests, and ecosystem are much more complex than that. Allison described the pride that fishermen exude when restaurants display the name of their boat on menus.

Fishermen and seafood dealers in the LocalCatch network recognize that their professions involve the extractive cultivation of a wild system. They work to balance their needs with the ecosystem's. During the Local Seafood Summit in 2016, one of those Core Values agreed upon acknowledges that homogeneous seafood harvests and diets have driven seafood systems in unsustainable directions.

> Eating with the ecosystem means matching our seafood consumption to the rhythms of nature and place. It means celebrating and respecting a region's marine biodiversity by harvesting a diversity of seafood and respecting the unique seasonality of every species and fishery. It means appreciating the ocean as a

> complex ecological system and engaging and educating consumers to enable them to become conscious consumers (LocalCatch.org, 2016).

Stewardship by seafood industry stakeholders within the local seafood movement manifests in adherence to regulations and marketing schemes that promote businesses committed to following the rules and maintaining socio-ecological balance, as they try to earn a profit (Lam, 2012).

But transition to a new system is not easy. Though some fishing communities are trending toward an ethos of sustainability and stewardship, bias within seafood systems still extends to fishermen, as well as consumers. For generations, cod meant a relatively stable livelihood for New England fishermen (recall the joke about walking across the Gulf of Maine across the backs of cod.) That belief is hard to shake. Unfortunately, the promise of a mortgage payment based on a few species, an oceanic monoculture now deprives fishermen of stable funds for today's mortgage payments. The trick is convincing fishermen to value other species, to see bycatch species, trash fish, as beautiful. Jon said that cod are ugly and that mackerel and scup are beautiful. I am not convinced that he has not fallen into the same trap he fell into with cod, assigning beauty to financially valuable species. Aesthetically, who is to say which fish is more pleasing to the eye or palate? But his point is well taken. If fishermen learn to see locally abundant, underutilized species like scup and mackerel as beautiful and lucrative, then maybe the ecosystem and fishing communities have a chance at longevity.

Community Food Festivals as Opportunities for Growth

Though challenges remain, a sustainable future, while not fully realized, is hopefully on its way. For local seafood markets, the key will be convincing New

Englanders that the ocean has more to offer than cod and that they can act sustainably by making small changes to their behaviors (Tolley et al., 2015). Through events like Seafood Throwdowns, NAMA and other advocacy groups provide opportunities for audiences to interact with chefs and harvesters in a fun, low pressure environment; they can be agents of change that evoke emotion from participants. Food festivals provide holistic experiences for their visitors, allowing them to explore elements of the supply system that are usually invisible to them (Mason and Paggiaro, 2012). Organ et al. (2015) found that positive emotions developed through engagement at food festivals "are good predictors of food buying behavior six months later" (p. 84).

NAMA's Seafood Throwdowns certainly evoke emotions from participants and spectators, whether it is a harvester impressed by the enthusiasm of the audience toward his catch and convinced that trashfish are worth catching or a chef who is inspired to create an innovative dish using an unfamiliar ingredient. By recognizing cultural roles in food systems, the local seafood movement establishes non-hierarchical measures of care by valuing communities and using commercial interests to support biodiversity and species conservation goals necessary for a sustainable fishing future (Tolley et al., 2015).

In addition to providing interactive learning experiences, community organizers, advocates, and public events can help frame the direction of local food movements (Campbell, 2004). And because advocacy organizations have developed relationships within the supply chain, they can try to affect consistent change at each level of the supply chain. Community festivals demonstrate that the local seafood movement is inclusive of social and cultural diversity, even if CSFs do not always reflect that diversity. CSFs, though a prominent component, do not represent the entire movement and may in

fact be lagging in their promotion of seafood diversity. The fact that event participants from underserved communities and ethnic minorities are familiar with the underutilized species featured at Seafood Throwdowns, have embraced seafood variety as part of their cultures, and recognize diversity as an opportunity to support their communities should signal that underutilized species are worth investing in.

Critiques of the Local Seafood Movement

While CSFs represent opportunity for increased revenue among fisherman, there are dangers associated with creating a new system that targets new species and promotes diversity. Quaas and Requate (2013) argue that consumer preferences for diversity may hasten stock collapses as a wider range of species are targeted. Fisheries scientists and conservationists have warned of "fishing down marine food webs," a phenomenon in which lower trophic level species replace disappearing high trophic level species in the market (Pauly et al., 1998). Without effective management measures that adapt to shifting ecological conditions and market demand, preferences for diversity may explain the "cascading collapse of fish stocks that has recently been documented on a worldwide scale" (Costello et al., 2008; Quaas and Requate, 2013; p. 23). While the United States has effective fisheries regulation that have rebuilt fish stocks over the last few decades, embracing seafood diversity could put fishing pressure on more stocks, with unknown consequences.

Another key challenge to the CSF model is the adaptability of the industry to changing social, economic, and environmental conditions. CSFs depend on flexibility from their customers (who must be willing to accept varied choice depending on fishing conditions) and, to stay consistent with their Core Values, encourage flexibility among

their fishermen. In fact, CSFs are uniquely positioned to capitalize on the ecological changes, such as species migrations and extirpations due to climate change. Yet, there is a danger of lagged social and ecological responses to climate change (Pinsky and Fogarty, 2012). One reason is that regulations do not move as fast as fish do. For example, until recently black sea bass populations, which used to be centered in Virginia, are now centered in New Jersey and extend up to New England (Vaidyanathan, 2017) and have become a popular menu item. However, regulations have not caught up with the migration, limiting their presence in the market; a stock assessment was first conducted in New England in 2016.

A final critique of the CSF model and local seafood movement is the lack of standardization. The acronym "CSF" does not refer to a specific business model defined by regulations or agreed-upon standards; it is an approach to seafood marketing (Bolton et al., 2016). While the LocalCatch network has developed a set of Core Values, they are not legally binding. Lack of standardization makes promoting a cohesive message of ecological and social responsibility to wide audience – beyond the local food movement – more challenging. It has also left the movement vulnerable to co-option by large-scale, mainstream seafood suppliers, which weakens the message and power of the movement.

Recently, the Fulton Fish Market in New York City started its own "CSF, using LocalCatch Core Values as promotional material for a weekly catch share despite evidence that Fulton does not practice those values (Northwest Atlantic Marine Alliance, 2017). While numerous voices within the LocalCatch network have expressed concerns about adopting a "CSF" or "LocalCatch" certification scheme, Fulton's perversion of the CSF model and values exposes a missed opportunity to add value to CSF products and

protect the movement. As Watts et al. (2005) points out, there is no guarantee that "alternative" or direct sales marketing initiatives are environmentally or socially responsible.

CHAPTER 6: CONCLUSION

Limitations and Opportunities for Future Research

It is important to note that the local seafood movement and presence of community supported fisheries is not limited to New England. Members of the Local Catch network operate throughout North America and beyond. People all over the world are trying to find innovative solutions to the challenges face by small-scale fishing communities and the ecosystems they depend on. Also absent from this study were perspectives of fishermen. Though one seafood dealer commented that "when you are 100% fishing you are just looking at the money, thinking about who is going to pay me the most," including fishermen's voices and how they feel about and act within a changing system is a critical part of painting a holistic picture of barriers and opportunities within the system. Future research should include these voices.

This thesis also highlighted opportunities for future research and exploration of the local seafood movement. The Core Values of the LocalCatch network helped frame this research and have the potential to drive the direction of seafood systems. But for the Core Values to be impactful, they need to reach beyond the local food movement. More research is need to assess if/how these values are applied in mainstream markets. Have CSF customers begun to demand that seafood supplier operating outside of the LocalCatch use similar values? Are fishermen choosing to sell their catch based on these values? I also suspect that, because of educational initiatives conducted by seafood businesses and advocacy groups, there may be a knowledge gap between CSF and mainstream buyers. Study of that gap could provide direction for educational initiatives in mainstream seafood markets and identify strengths and weaknesses of education

provided by CSFs.

Seafood Throwdowns and food festivals also raised some interesting questions. While audiences appeared enthusiastic, research could delve into the true impact of local seafood festivals and similar events on future behavior. Because Seafood Throwdowns include several participant groups, it would be interesting to look beyond individual consumers. Do these events influence behavior of chefs or harvesters? Food festivals also highlight the potential to engage a more diverse public in the local seafood movement. It would therefore be prudent to explore the role of social and cultural diversity in the development of local seafood movement and expansion of preferences for seafood diversity.

Toward a Responsible Seafood Future

Though marine ecosystems may benefit from reduced exploitation, which can be achieved through limited or non-use (i.e. science-based fisheries management), the problem during the Anthropocene is not the fact that markets and their players intervene in natural processes, but *how* they intervene (Cronon, 1996). The singular, Romanticized focus on cod, not the fact that some people inserted themselves into a "natural" system, led to their demise. Thinking of and marketing fish as “wild” has become dangerous. That seafood comes from the “wilderness” causes us to forget that we play a significant role in developing the processes that we exploit. Reimagining cultural roles in marine systems, thinking of responsible harvesters and dealers as farmers that plan their harvests, that can choose to preserve biodiversity and ecosystem health, instead of predators that catch what they can, could usher in a sustainable future. By establishing a system of trust

with local harvesters and marketing the benefits to local fishing communities to their customers, seafood dealers have power to coax the market in a new, sustainable direction.

Recently, scientists and conservationists have concluded that biodiversity is a key to functioning and resilient marine systems in the Anthropocene (Hughes et al., 2005). However, cod lovers and fishermen have contributed a global phenomenon among some seafood consuming cultures capable of harvesting species on a mass scale: along-demonstrated care for the ocean through a singular focus on an iconic species. I think of conch in the Bahamas (BREEF, 2002), and bluefin tuna in Japan (Matsuda et al., 1998). But a transition toward the CSF model could reflect the growing demand for diverse seafood products worldwide; underutilized species, like dogfish, often enter foreign markets because there is little domestic demand (Greenberg, 2014). If the local seafood movement can raise demand for seafood diversity domestically, so that it reflects foreign demand for those species, perhaps local supply systems can become more competitive with global markets and better support local livelihoods.

Seafood suppliers, aided by community organizers and food advocates, and a new natural-cultural ethos, must take the first step in changing New England's seafood system. Once seafood dealers establish a new market framework, through communication and relationship building, fishermen and customers can join the system in facilitative roles. For the CSF model to work, for fishermen and ecosystems to benefit, trashfish and bycatch species must be elevated in the consciousness of all market actors. New England's seafood diversity must become as valuable as cod, giving fishermen an incentive to target and land a wider variety of species.

The rise of community supported fisheries highlights the changing role of

middlemen; that role has become more dynamic. Within CSF market systems, middlemen have multiple roles – as suppliers, processors, and supply system coordinators – and use their relationships within the local seafood market/movement to shape the system. Though efforts to shorten supply chains initially included attempts to "cut out the middleman," they now provide numerous opportunities for alternative seafood marketers to coordinate supply chains and embrace the values necessary for a sustainable and responsible system (Witter and Stoll, 2017). CSFs have sought to replace traditionally tension-filled relationships between market participants with a system that balances profit with social and ecological responsibility, a characteristic of seafood systems identified as crucial to the survival of New England's local fishing communities.

I acknowledge that shaping a new system is challenging, especially "if you remember grandpa saying 'we used to catch those [trash fish] in the lobster traps and throw them back.'" But does elevating underutilized species and the importance of strong community bonds threaten the historic appeal of New England's seafood? I do not think so, and CSF dealers do not think so, but customers and fishermen still need some convincing. Fortunately, now that commercial fishermen in the region can earn a fair wage by catching dogfish and other underloved fish, the region's seafood narrative contains elements of home. Care for the ecosystem and care for fishermen can still be defined by wild harvested seafood. But in the Anthropocene, care also means passing up the mighty cod for a diverse array of seasonal, locally abundant species. That shift does not happen without strong community bonds and well-connected dealers willing to gamble that cod is not the future.

APPENDIX I

Community-Based Fisheries: Community-based fisheries enhance the social, ecological, and cultural fabric of our coastal communities. At the heart of community-based fisheries are community-based fishermen* who live and work in the communities where they fish. They are typically independent, owner-operators*, and are inherently committed to the long-term health of the marine ecosystem. Seafood supply chains and policies should foster and strengthen community-based fisheries.

Fair Access: Community-based fisheries cannot survive without equitable access* to the ocean commons. Fisheries access should be kept affordable, available to future generations, and connected to the communities where they are fished. The ocean and its resources should be held in public trust and not privatized*.

Fair Price: Paying a fair price to fishermen, processors, and shore-side businesses helps support local economies and increases the quality of life for all those whose hands touch our fish. Community-based seafood should be available and affordable for all communities, and must be balanced against the needs and limits of the ocean as well as fishermen's ability to sustain a livelihood with dignity and joy. Paying a fair price is also based on a conservation ethic where fishermen are able to attain higher value for lower volume of catch, which places less pressure on the fish stocks.

Eating with the Ecosystem: Eating with the ecosystem means matching our seafood consumption to the rhythms of nature and place. It means celebrating and respecting a region's marine biodiversity by harvesting a diversity of seafood and respecting the unique seasonality of every species and fishery. It means appreciating the ocean as a complex ecological system and engaging and educating consumers to enable them to become conscious consumers of the ocean's food production capacity.

Traceable and Simple Supply Chains: Traceable and simple supply chains promote trust and a more direct relationship between fishermen, the public, consumers, retailers, wholesalers, managers and chefs. More direct and simple supply chains help maximize value to the fishermen and consumer. Information on who, how, where, and when a fish was caught, processed and distributed should be readily available to consumers. We encourage all seafood consumers to try local* first.

Catch and Handle with Honor: From sea to table, strict levels of quality control and safe handling practices ensure that we honor the fish, its life, and its role in our food system. This also means minimizing waste by using the whole animal as much as possible, and educating consumers about how to make use of and care for the whole fish. Community and Ecosystem Based Fisheries Management: Fisheries management is key for maintaining sustainable fish stocks and livelihoods. Management should be bottom-up, ecosystem-based, and foster collaboration between fishermen, scientists, policy makers, and the broader public. Management should combat illegal fishing, consolidation, and privatization. Management should also address non-fishing impacts that threaten the health of our fisheries, such as climate change, ocean acidification, and

pollution.

Honoring the Ocean: Seafood connects and incentivizes the broader public to care for marine ecosystems. By eating seafood and knowing who, what, when, and how a fish was caught, the public is taking the health of wild fisheries, coastal communities and the ocean into its own hands. Not only is the commitment to healthier marine ecosystems crucial, but it is also a moral imperative that ensures future generations will inherit a clean and healthy ocean.

Creativity and Collaboration: Building a better seafood system requires innovation, creativity, and thinking outside the box. It also requires that innovative ideas are not isolated but rather spread through a network of diverse stakeholders working together, aligning around shared values, and acting. Creativity and networking fosters knowledge sharing, collective understanding, and mentorship needed to build a better future.

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