

AN ABSTRACT OF THE THESIS OF

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Title: Youth Recruitment and an Aging Workforce: A Pilot Study of Intergenerational Family Business in Oregon's Commercial Fishing Industry

Flaxen D. L. Conway

Commercial fishing is a culturally and economically significant industry on the Oregon coast. The importance of this industry to human communities is often neglected in fisheries research, with economic and ecological data being favored by managers and decision makers. Recent observations in many coastal communities have indicated aging of fishermen and a lack of young people entering the industry, causing a "graying effect" in commercial fishing fleets. This phenomenon could have significant implications for commercial fishing participants as well as the larger communities this industry supports. This qualitative study uses oral history data to examine the graying phenomenon and implications for the resilience of the commercial fishing industry in two coastal communities in Oregon. Extensive research has been conducted on the graying of the fleet in Alaska but research on the phenomenon in the Pacific Northwest is lacking. Results reveal that commercial fishermen, fishing family members, and fishing support industry representatives perceive graying as a threat. This threat was specifically referenced in relation to changing fisheries management such as catch share implementation, as well as shifting motivations to fish and dynamic social influences. Such changes may impact resilience through lost local ecological knowledge, diminished connection to place, and a loss of financial capital that has historically been brought into coastal communities through

commercial fishing. This research offers insight into the relationship between fisheries management and community perception, and provides potential strategies that can be used to combat current regulations favoring larger corporate fishing enterprises. The results of this study also add to the literature on the graying of the fleet phenomenon providing much needed background and context for more extensive graying projects into the future.

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Youth Recruitment and an Aging Workforce:
A Pilot study of Intergenerational Family Business in Oregon's
Commercial Fishing Industry

by

Deanna E. Caracciolo

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APPROVED:

Major Professor, representing Marine Resource Management

Dean of College of Earth, Ocean, and Atmospheric Sciences

Dean of Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Deanna E. Caracciolo, Author

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CHAPTER 1: INTRODUCTION

Commercial fishing has historically played a critical role in driving economic activity and shaping the cultural identity of coastal communities in the United States (Gilden, 1999; Pomeroy, Hall-Arber, & Conway, 2015; Sharma, 2006). The commercial fishing industry as well as the communities that house it are no newcomer to change, and out of necessity, have had to adapt overtime to fluctuating economic markets, variable coastal ecology, evolving social influences, and technological innovation.

Though the commercial fishing industry in the United States is dynamic and characterized by its high adaptive capacity¹, the last 50 years have been filled with rapid and significant change previously unseen (Hanna & Hall-Arber, 2000). During the 1970's, accelerated expansion of fleets led to increased pressure on fish stocks and a dramatic reduction in fish populations (Conway, Gilden, & Zvonkovic, 2002). Regulations were quickly implemented to combat overharvesting and the unsustainable management of fisheries. The most significant and overarching of these regulations came to be the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA enacted multiple conservation measures for marine fisheries including the dramatic reduction of allowable catch, limiting entry into commercial fisheries, and controlling overexploitation of the resource (Hanna & Hall-Arber, 2000; Himes-Cornell & Hoelting, 2015). Yet these changes to allowable harvest, as well as increased demand for seafood, have placed pressure on commercial fishing fleets to increase efficiency and supply for globalized markets (Mecum, 2006).

To combat these social issues and better recognize the connection between the human world and marine fisheries, the adoption of 10 National Standards were added to the MSA in 1996. In particular, National Standard 8

¹ Adaptive capacity – Ability for a system to adjust to cope with external stresses.(Smit & Wandel, 2006)

required the consideration of social and economic consequences on coastal communities when making fishery management actions (Jacob, Farmer, Jepson, & Adams, 2001). Although National Standard 8 has been in place since 1996, coastal communities are witnessing a new era of reduction in commercial fishing participation, consolidation of fishing fleets, and possible loss of local knowledge resulting from these changes (Mecum, 2006).

This research focuses on just one of the challenges that commercial fishing is currently facing, termed *Graying of the Fleet*. This phenomenon denotes an overall increase in the age of the commercial fishing workforce as a result of decreased youth entering the industry (Russell, Sparks, Arias-Arthur, & Varney, 2014). Extensive graying research has been conducted in Alaska, but data are currently lacking in the Pacific Northwest. This small-scale pilot study provides a meaningful contribution to the topic of graying and community perception in two communities on the Oregon coast.

Using qualitative methods, this research focuses on the perceptions of graying and examines perceived factors contributing to aging. More specifically, it investigates implications of aging on the resilience of the commercial fishing community - a community of interest, containing individuals who hold direct roles within the commercial fishing industry such as fishermen, fishing family members, and fishing support industry representatives. This community of interest is intertwined with the community of place - the communities geographically located on the coast which house commercial fishing fleets (Conway et al., 2002). By focusing on the community of interest this research project will help fill a gap in the social understanding of the impacts of fisheries management on an important industry in the state of Oregon and a source of livelihood that has historically driven coastal economies.

Research questions were developed to address issues of graying, youth entry, regulation and management, intergeneration fishing within the industry,

and community resilience. This thesis was led by an investigation into these two central questions:

1. How have external drivers of change, including management decisions, impacted the graying of the fleet and intergenerational family business practices?
2. How would the loss of fishing impact both cultural and economic resiliency of coastal residential communities?

Unlike traditional fisheries research that relies heavily on quantitative analysis, this study uses qualitative research methodology to examine the extent of graying perception within the community of interest. In addition to collecting data for social analysis, this study also contributes oral histories to the Voices from the West Coast database², a NOAA Fisheries project focusing on collecting and archiving local fisheries knowledge.

This study does not encompass an exhaustive review of graying within Oregon's commercial fishing industry. Rather, it serves as a pilot study and should be regarded as a prerequisite until more extensive research of graying can be conducted within Oregon, and more comprehensively, the West Coast. This study as well as future work may be used to build a dialogue between management factions on the graying phenomenon and its implications for fishing and coastal communities.

An in-depth examination of the graying phenomenon helps bring to light an understanding of the changes and challenges faced by commercial fishermen, their families, and support industries. Only through this investigation can we assure the sustainable continuation of coastal heritage in relation to the graying phenomenon along the Oregon Coast. The following chapter includes background information on fisheries regulation in the United States and graying

² Voices of the Fisheries: Human Dimensions Project. (n/d). Retrieved April 5, 2016, from <https://www.st.nmfs.noaa.gov/humandimensions/voices-from-the-fisheries/index>

knowledge necessary for considering the full spectrum of graying. It also includes information on the NOAA, Voices from the West Coast database.

CHAPTER 2: BACKGROUND & LITERATURE REVIEW

Modern Fisheries Management

“The long-term goal of maintaining fisheries resources in a way that provides sustained income for fishing communities cannot be attained with open fishery access or with regulations based solely on natural resources data. Interactions between the species that form an ecosystem need to be taken into account, as well as user responses to changes in resource dynamics and the fishery system in general (including socioeconomic impacts that change in a fishery can generate in fisher operations). Ignoring these processes has led to management failures in the past and will continue to do so if they are not included in the resource management assessment.” (Salas & Gaertner, 2004, p. 163)

Commercial fishing in the United States reveals a dynamic story of natural resource management adaptation. The Magnuson-Stevens Fishery Conservation Management Act (MSA) of 1976 continues to be the primary governing fisheries legislation in the United States. Prior to its implementation, no single overarching policy was in place to manage fish stocks and fishing pressure. The MSA has gone through multiple amendments and reauthorization processes since its original enactment. Two of the most recent and influential changes to the act being in 1996 with the implementation of the Exclusive Economic Zone (EEZ) to 200 nautical miles and the creation of regional fishery councils, and then in 2006 with its most recent reauthorization (New England Fishery Management Council, 2017). The adoption and amendment of the MSA has been responsible for accommodating optimal exploitation of coastal fisheries and the sustainable management of stocks in the face of technological, social, ecological, and environmental change (Clay & Olson, 2008; New England Fishery Management Council, 2017).

During the reauthorization of the MSA in 1996, human dimension requirements were defined, including a specific demarcation of fishing

communities as “substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs” (50 C.F.R β 600.345(3)). These new requirements also outlined how Fishery Management Plans (FMP) must follow the ten national standards that ensure fishery conservation and management. These FMP’s must be developed and frequently updated to accommodate for the best available science and changes to MSA structure. National Standard 8 includes a focus on fishing community participation and economic security in fishery management with goals designed to-

“(1) Provide for the sustained participation of such communities; and (2) To the extent practicable, minimize adverse economic impacts on such communities [...] This standard requires that a Fishery Management Plan (FMP) take into account the importance of fishery resources to fishing communities.”³

The National Environmental Policy Act (NEPA), which focuses on the enhancement of the environment and has long been regarded as the main environmental protection act in the United States, was also revised in relation the MSA in 2013 (Office of Sustainable Fisheries, n.d.). This revision stated that NEPA require the documentation of impacts to social, economic, and environmental sectors of a system, both realized and potential, before any management action can be taken (NEPA; 42 U.S.C. § 4321; MSA; 16 U.S.C. §1801 et seq.). These characteristics are documented through fishery impact statements (FIS), which are often collected during a broader environmental impact statement (EIS) by the National Marine Fisheries Service (NMFS). FIS’s more specifically consist of a social impact assessment (SIA) and an economic

³ Magnuson-Stevens Fishery Conservation Management Act, National Standard 8. (n.d.) Retrieved April 2, 2017 from http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_8_cfr.pdf

analysis⁴. This study focuses on SIA's due to their connection to resilience, vulnerability, and general well-being of the human component at multiple scales from individual households to full communities and networks (Colburn & Clay, 2012). In addition to the collection of SIA social information and FMP development, before any amendment or management change can be implemented, the MSA also requires specific community communication goals be met:

“Assess, specify, and describe the likely effects, if any, of the conservation and management measures on (A) participants in the fisheries and fishing communities affected by the plan or amendment; and (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants.”⁵

Catch shares

Prior to the implementation of the MSA and related NEPA fisheries regulation, concern arose regarding the overexploitation of marine resources by industrialized fleets in waters off United States coastlines. During the 1970's, fish stocks were declining rapidly in the face of technological advances, open access⁶ to the resource, and expanding fleets (Conway et al., 2002; Pauly et al., 2002). With concern over the unsustainable exploitation of fisheries came swift implementation of regulations limiting fishing pressure to allow for the regeneration of stocks (Hanna & Hall-Arber, 2000; Pomeroy et al., 2015). This transition away from open-access management and toward a neoliberal, free market model strove for economic efficiency and often included the

⁴ Guidance for Conducting Economic and Social Analyses of Regulatory Actions. (n.d.) Retrieved March 23, 2017 from http://www.fisheries.noaa.gov/sfa/laws_policies/economic_social/index.html

⁵ Magnuson-Stevens Fishery Conservation and Management Act (1996) retrieved April 28, 2017 from <http://www.nmfs.noaa.gov/sfa/magact/mag3.html>

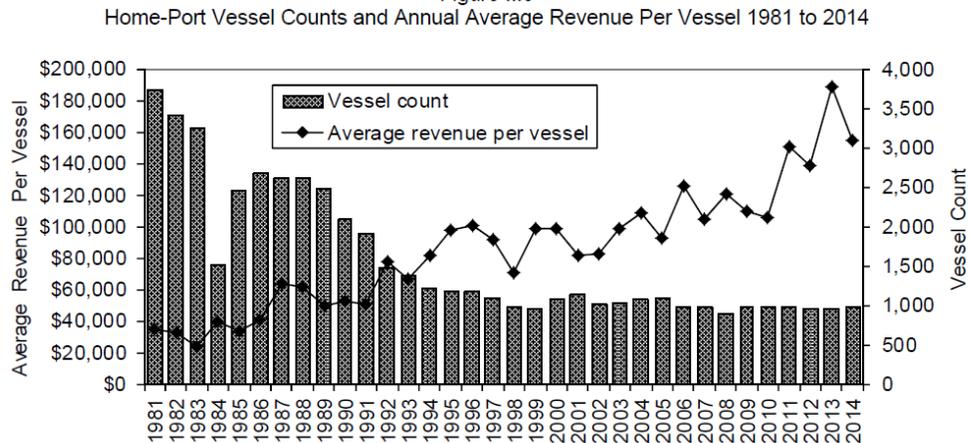
⁶ Open access denotes an unrestricted method of fisheries management where limited regulation doesn't define the quantity an individual vessel can extract or who can participate in commercial fishing (Bjørndal & Conrad, 1987)

implementation of quota systems (Mansfield, 2004). Individual quota systems, also referred to as 'catch shares', drastically reduced fishery-wide total allowable catch (TAC) while privatizing the resource and encouraging optimal economic efficiency (Pomeroy, Hall-Arber, & Conway, 2015). Quota was divided based on the TAC set by federal stock assessments and varied by fishery. TAC was then distributed to individual participants in the form of quota shares, often based on current or historical involvement in fishing, vessel capacity, gear type, or crew numbers (Copes, 1986; Pomeroy et al., 2015; 16 U.S.C. §1853(b)(6)). Some systems allow the sale and lease of individual quota, known as individual transferable quota (ITQ) (Mansfield, 2004); this commodification of the right to fish created a market for quota shares within the industry (McCay, 1995).

The many benefits of catch share programs include the potential increase of safety within the fleet, increased economic profit (Figure 1.1), decreased pressure on fish stocks, improved overall fleet efficiency, and better resource stewardship among quota owners (Allen, 2009; Binkley, 1989; Carothers, 2013; Mansfield, 2004; McCay, 1995, 2004; Mecum, 2006; Olson, 2011; Pinkerton & Edwards, 2009; Windle, Neis, Bornstein, Binkley, & Navarro, 2008). Consolidation of the fleet is a concomitant goal of this quota-management technique, and while it inherently decreases fishing pressure it can have dramatic cultural and financial impacts to communities of place and interest (Carothers, 2008, 2013; Mecum, 2006; Olson, 2011; Russell et al., 2014). The community of place being the geographic community, while the community of interest is the community of individuals who have a role in the fishing industry. To distinguish these two communities for the purpose of this study, the community of place will be termed 'the coastal community', while the community of interest will be referred to as 'the fishing community'.

The impact of catch share programs on community culture, economy, and persistence are widely documented (Carothers, 2013; McCay, 1995, 2008; Olson, 2011; Zhao, Tyzack, Anderson, & Onoakpovike, 2013), but a clear gap in

information is apparent in regard to demographic shifts of fishermen resulting from catch share complications within the Pacific Northwest (S. Calhoun, Conway, & Russell, 2016; Cramer, 2000; Tuler, Agyeman, Pinto da Silvia, & Kay, 2008).



- Notes: 1. Revenues adjusted to 2014 dollars.
 2. Average revenue per vessel is for onshore landings; distant water fisheries revenue is not included. The revenue may be from landings made in California and Washington as well as Oregon.

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Figure 1.1 Home-port vessel counts compared to annual average revenue per vessel from 1981 to 2014.

This research builds upon the current literature by focusing on the these demographic shifts and related aging of the commercial fishing workforce and diminished entry of youth into the industry, a phenomenon known as “graying of the fleet.” This research also accounts for the recent implementation of catch share management systems in two major fisheries in the Pacific Northwest. The Pacific groundfish and whiting trawl fisheries were the first fisheries in the Pacific Northwest to implement a catch share system in January 2011. An initial multiyear evaluation of this system commenced in 2010 and identified broad thematic impacts of the catch share program on fishing communities and their fleets (Russell et al., 2014). The Russell et al. 2014 report documents one theme in particular that is the foundation of this study: “graying of the fleet” (also

referred to as graying). This phenomenon refers to an overall increase in the average age of fishermen, and is often attributed to a decrease in youth entry into the industry (Russell et al., 2014).

Implementation of catch share systems in New Zealand, Iceland, New England, and Alaska have allowed for the graying of the fleet phenomenon to be studied more extensively (Carothers, 2008, 2013; Chambers & Carothers, 2016; Clay & Olson, 2008; Colburn & Clay, 2012). Much of this research has found distinct and sometimes harmful social implications of catch shares on commercial fishing communities.

Resilience, Vulnerability and Adaptive Capacity

“Vulnerability is the key to an understanding of risk that attempts to break from the all-too-technocratic attitudes that have characterized relationships between human societies and their environments over previous centuries.” (Clay & Olson, 2008, p. 144)

In the last decade, a focus has been placed on defining resilience and vulnerability within natural and social systems. As a result, social scientists have sought to refine these definitions, and literature has grown substantially on resilience and vulnerability within fisheries and the social systems that surround them (Berkes & Ross, 2013; S. Calhoun et al., 2016; S. M. Calhoun, 2015; Clay & Olson, 2008; Coulthard, 2012; Folke, 2006; Gallopín, 2006; Johnson, Anna, & Thompson, 2014; Marshall, Fenton, Marshall, & Sutton, 2007; Merderer & Barker, 2000; Smit & Wandel, 2006; Tuler et al., 2008). Although these efforts have yet to come to a final consensus on the textual definition of vulnerability and resilience, the broad underlying meaning remains constant throughout the literature (Davidson, 2010). Vulnerability can be described as a “function of stresses people experience and their ability to cope with them...with specific attention given to differences among groups and religions.”(Tuler et al., 2008, p.

172) Resilience may then be understood as the ability to adapt and endure in the face of changing conditions (Johnson et al., 2014).

According to Clay and Olson (2008) “vulnerability and resiliency highlight the role of people, in relation to each other and to the environment, in creating and coping with risk” (pg. 144). Due to the nature of vulnerability and resilience in coupled human-ecological systems, research surrounding this topic is highly multidisciplinary and operates on a broad spectrum of scales (Brosius, 2006; Clay & Olson, 2008).

Social vulnerability, more specifically, is the product of stress on a person’s or group’s experience and the ability for that social entity to cope with this perturbation (Adger, 2000; Tuler et al., 2008). These stressors can be internally derived within the social system, such as gender, ethnicity, and class, or a product of external influences, such as policy implications and economic disruptions (Clay & Olson, 2008; Tuler et al., 2008). Stressors vary by community of place and community of interest, so a specific context must be aligned with a stress for researchers to get a full scope of the issue (Turner et al., 2003). Coastal communities have been identified as being notably vulnerable to compounding changes within management, technology, and the environment due to the uncertainty surrounding the resource (Dyer & McGoodwin, 1999; Tuler et al., 2008).

Adaptive capacity connects both resilience and vulnerability within a system, and may be defined as the capacity and capability a system has to change when faced with a shifting environment (Folke et al., 2002; Gallopín, 2006; Smit & Wandel, 2006). Social, economic, and environmental systems alike should strive to increase adaptive capacity while reducing situations that may reduce adaptive capacity. Within fishing communities, shifts in management have the capability to help or harm the communities’ adaptive capacity in one or more of its integrated systems (economic, cultural, ecological, etc.).

Ecosystem-Based Management

Natural resource management agencies such as NMFS have begun to shift away from sector-based management methods and toward a more holistic framework known as ecosystem-based management (EBM) (Busch, Brown, & Mayer, 2003; Clay & Olson, 2008; Fluharty, 2005; Murawski & Matlock, 2006; NOAA, n.d.). This integrated system framework focuses on 4 key concepts consisting of understanding explicit tradeoffs, connections, adaptation, and place-based context (McLeod & Leslie, 2012). Through the implementation of EBM in fisheries management, human-dimension knowledge may be better communicated and understood while also offering the potential of integrating communities and groups into management processes (Granek et al., 2010; St. Martin, 2007). Methods of communication of the human-environment linkage may be better strengthened through oral histories and semi-structured interviews, aiding in transmission of local ecological knowledge for use in fisheries management (Abbott-Jamieson & Clay, 2010; Colburn & Clay, 2012). Social sciences have the ability to use both qualitative and quantitative methods to shed light on dimensions of vulnerability, resilience, and adaptive capacity within both coastal and fishing communities to build upon an EBM framework (Aswani et al., 2012; Clay & Olson, 2008; Fisher & Feinman, 2005).

Social Science in Fisheries

National Standard 8 within the MSA clearly indicates that the goals of management are to decrease the impact of policy change on social systems while continuing to achieve maximum efficiency and sustainability within the industry (Marshall et al., 2007). Understanding how communities adapt to dynamic social and ecological changes may enable management to better ensure resilience and reduce vulnerability within fishing communities.

Although the value of social science and qualitative research has been identified in revealing adaptive capacity characteristics within communities,

decision-makers continue to grapple with its inclusion in management formation processes (Clay & Olson, 2008; Harper, Zeller, Hauzer, Pauly, & Sumaila, 2013; Sievanen, Campbell, & Leslie, 2012). Quantitative stock assessments, which were previously the core basis for fisheries management (Clay & Olson, 2008), exclude the sociocultural aspects of community adaptive capacity. This struggle to include the social element may be due to an inability to generalize complex qualitative data, or the difficulty in appropriately communicating and using social science findings, which are inherently interdisciplinary (Harper et al., 2013; Sievanen et al., 2012). Communicating across disciplines, between natural science and social science, may produce confusion due to the inherent ambiguity of base concepts within individual disciplines (O'Rourke, Crowley, Eigenbrode, & Wulfhorst, 2013). Additionally, social research often requires further verification analysis in comparison to natural science studies, which must combat against time and budget constraints within research (S. M. Calhoun, 2015). Despite the challenges associated with the inclusion of social science into management, managers, scientists, and stakeholders must understand and support the contribution that qualitative research may offer in the management of coupled social-ecological systems. Optimally, this would give all parties concerned greater impetus to invest the time, effort, and capital into gathering and analyzing qualitative data (S. M. Calhoun, 2015; Lester et al., 2010; Sepez, Norman, Poole, & Tilt, 2006).

"Human experience of disasters may be primarily in terms of social disruption." (Clay & Olson, 2008, p. 143)

The importance of understanding social dynamics within fishery management has been targeted by many efforts in the last decade. As of yet, the integration of these efforts through a restructuring of current management frameworks has yet to be achieved (Sharp & Lach, 2003). Multi-method approaches of data collection and analysis (i.e. triangulation) will be crucial in

contextualizing social science data. Convincing managers and decision makers of its validity in portraying an accurate scope of reality is a challenging yet necessary goal (S. M. Calhoun, 2015). Using a multi method triangulation approach, oral history and semi-structured interview data from this study may be combined with stock assessment data and fishery landings data to achieve a more complete understanding of complex systems for use in creating and implementing successful management.

Graying of the Fleet

Graying of the fleet refers to the demographic shift within the commercial fishing industry where the overall average age of commercial fishermen, vessel owners, and industry support members is increasing in conjunction with decreased youth recruitment into the industry (Russell et al., 2014). This phenomenon (referenced as 'graying' for the remainder of this paper) has been documented by social scientists investigating the impacts of changing management on the fishing industry and the communities that harbor them. Graying has been primarily investigated in relation to the implementation of catch share programs and was first identified in 1982 in Bristol Bay, Alaska, after the implementation of the drift gillnet catch share program (Koslow, 1982). Koslow's research indicated that the catch share program created a barrier to entry for younger-generations seeking to join the industry.

More recently, research on graying has expanded dramatically with a majority of research being conducted on Alaskan fishing fleets. Within fishing communities, this work has uncovered concerns over barriers to entry that regulations impose for prospective incoming generations (e.g. obstacles concerning social and economic instabilities that have the potential to impact community resilience). Socioeconomic impacts of graying include diminished fleet revenue being input into coastal communities and the migration of younger-generations and support industries out of rural, coastal communities from a lack

of occupational opportunity (Carothers, 2008; Donkersloot, 2016). Sociocultural impacts include the disengagement of new generations from the fishing culture and communities they come from, and deterioration of local-ecological knowledge transferal between generations within the industry (Carothers, 2008, 2013; Chambers & Carothers, 2016; Lowe, 2015).

The long-term social implications of catch shares may be observed internationally as well. In Icelandic and New Zealand, where implementation of an Individual Transferrable Quota (ITQ) system took place in the early 1980's (McCay, 2004), the fleets are now showing signs of low opportunity for entry-level fishermen (Chambers & Carothers, 2016). Privatization measures of fisheries through mechanisms like catch share programs have also been found not to work as intended within small-scale fisheries (S. Calhoun et al., 2016; Carothers, 2010, 2011; Himes-Cornell & Hoelting, 2015; Jacobsen, 2013; Ringer, 2016; Van Der Voo, 2013). Rights-based management systems, such as catch shares, often use an economic model that lacks consideration of social structures and how individuals organize around resources (Chambers & Carothers, 2016).

NOAA's "Voices from the Fisheries"

As part of the National Marine Fisheries Service (NMFS) Local Fisheries Knowledge (LFK) Pilot Program, the "Voices from the Fisheries" (VFF) oral histories database was launched by the National Oceanic and Atmospheric Administration (NOAA) in 2003 (Abbott-Jamieson, 2007; Abbott-Jamieson & Clay, 2010). This database set out with the initial goal of engaging high school students in coastal fishing communities and increasing ocean literacy. With the success of this project, the VFF database project expanded into collecting and preserving place-specific cultural and ecological knowledge within the fishing industry across the United States.

Engagement from East Coast fisheries and Gulf Coast fisheries was substantial, but West Coast fisheries were greatly under-represented within the

database. This gap led to the creation of “Voices from the West Coast” (VFWC), which specifically targeted the collection of oral histories from Washington, Oregon, and California. Both the main VFF database and the geographic sub-set, VFWC, are open access, available to both researchers and the public.

“Separately, each history provides an in-depth view into the professional and personal lives of individual participants. Together, they have the power to illuminate common themes, issues and concerns across diverse fishing communities over time. The Voices from the Fisheries Database is a powerful resource available to the public to inform, educate, and provide primary information for researchers interested in our local, human experience with the surrounding marine environment.”⁷

Voices from the West Coast

Voices from the West Coast (VFWC) was created in 2013 in an attempt to increase representation of West Coast fishery oral histories in the VFF database. This collaborative project started as a partnership between the National Oceanic and Atmospheric Association’s Northwest Fisheries Center (NOAA NWFSC), Oregon State University (OSU), Newport Fishermen’s Wives (NFW), and Warrenton High Fisheries Inc. (WarHF). It was designed to develop project goals, interview questions, and target participants (including fishermen, fishermen’s wives, fishing support industries, federal and state managers, fish mongers, etc.). Some partnerships strengthened, and some faltered, leading to the discontinued collaboration with WarHF (S. M. Calhoun, 2015). Ever-increasing involvement and coordination with the NFW has strengthened Newport community involvement in the project maintaining a collaboration with OSU and NOAA. This research is a continued collaboration between NOAA, NFW, and OSU and strives to encourage the preservation of local fishing

⁷ Voices of the Fisheries: Human Dimensions Project. (n/d). Retrieved April 5, 2016, from <https://www.st.nmfs.noaa.gov/humandimensions/voices-from-the-fisheries/index>

knowledge through capturing oral history interviews and transcribing them for the database. Additional photographs and personal memorabilia surrounding the industry are also documented for the inclusion in the database and used by the community. Similar oral history interviews were collected in Port Orford (in cooperation with the Port Orford Ocean Resources Team; POORT) documenting small-community fishing knowledge. Unlike the research that has been done in Newport, social research has been done on a somewhat lesser basis in the smaller ports of the Oregon coast.

This study focuses on contributing oral history interviews to the cumulative VFWC database while also expanding information on the perception of aging (graying) within the industry. The specific subset of “graying questions” (Appendix D and E) contributes a dimension to the database that is currently lacking and may be helpful in accumulating a record of coastal community resilience into the future. This research and its thematic focus on graying provide an example of how the VFF database may be used to address specific thematic elements of interests and concerns within communities.

CHAPTER 3: METHODS

A multi-method approach was utilized to collect both primary and secondary data (Clay & Olson, 2008; Creswell, 2014; Ingles, 2007). In addition to a literature review, the gathering of oral histories and semi-structured interviews allowed investigators to maximize the type and quality of information gathered from participants. Oral histories targeted the collecting of participant stories in their entirety, without the use of probing questions on part of the researcher. After the completion of oral histories, a series of semi-structured interview questions were used to address specific thematic points that may not have been adequately addressed but were pertinent to the aging of the fleet. Participant observation during community of interest meetings, such as the Pacific Fisheries Management Council meetings, were also noted and used to contextualize interview information (Bernard, 2011; Robson, 2011).

Forty-eight participants were interviewed from the coastal communities of Port Orford and Newport, Oregon (Figure 2.1); 25 of which were interviews inherited from prior research conducted in 2014 (S. M. Calhoun, 2015). These inherited interview transcriptions share the same mixed method approach as this graying research. In total, 33 participants from Newport were interviewed and 14 participants from Port Orford were interviewed.



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Figure 2.1 Map of Oregon coast with marked study sites, Newport and Port Orford (yellow stars), in relation to major population centers.

To better organize data, participants are categorized by age and experience into generational categories. For example, participants over the age of 50 with extensive experience in the fishing industry are categorized as part of the older-generation, while younger-generation fishermen are younger than 50 years old and may have less extensive fishing experience in comparison to the older-generation. (Figure 2.2)

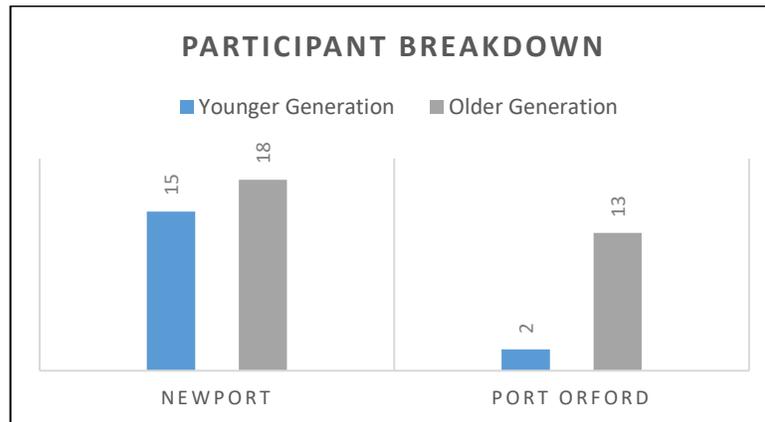


Figure 2.2 Communities and number of participants interviewed as differentiated by older and younger-generational groups. *One older-generation participant in Port Orford was interviewed twice to gather additional information.

Participant Recruitment and Data Collection

Initial participant identification was based on a modified snowball sampling technique (Auerbach & Silverstein, 2003; Berg, 2001; Bernard, 2011; Robson, 2011), which incorporates the knowledge of local collaborators, as well as the local knowledge of fishermen in the areas of interest. Initial recruitment began with convenience sampling based on a recommendation from project collaborators such as the NFW and POORT. After the interview, each participant was asked to expand upon the information pool by recommending further eligible participants. To increase participant diversity, multiple recommending parties from each community were asked to expand upon the recruitment list. Eligible participants included men, women, and young adult descendants who had been involved or whose families had been involved in the fishing industry in the ports of interest. Diversification of participants was focused on including a broad spectrum of boat/quota ownership and role in the industry. No limitations were set on economic, social, or demographic characteristics of participants. To ensure all major narratives surrounding graying were addressed, participant recruitment and interviews continued until thematic saturation had been reached (Auerbach & Silverstein, 2003; Berg, 2001; Bernard, 2011; Robson, 2011).

All interviews took place in person in the home community of the participant and ranged in length from 25 minutes to over 2 hours. Most interviews were one-on-one with the principle researcher, while few interviews included 2 participants (often spouses or other relatives). Interview locations were chosen by the participant and often took place on their boat, in their home, or in a local shop. More local venues such as coffee shops and restaurants were avoided in an attempt to decrease outside stimulus and increase recording quality. Each interview was audio and video recorded, transcribed verbatim, and supplemented by notes on any behavioral elements the principle researcher deemed materially relevant to ensure consistency and open-coding analysis (McLellan, MacQueen, & Neidig, 2003). Video recordings were clipped using MP4 software, and 5-10 minute clips capturing a story, motivation, or other interesting depictions of life as a fisherman were uploaded to the VFWC project database. All interviews were voluntary. To attain full transparency and secure consent, the principle researcher began each interview with a full explanation of the project's goals and intentions and obtained consent forms for both the audio content and the VFWC's videotaping. Participants had the choice to sign consent waivers before, during, or after the interview.

Three sets of semi-structured interview questions were formulated by researchers at OSU in collaboration with NPFW and POORT to initiate and guide oral histories and interviews (Appendices C-D). The first set of questions laid out a template to loosely guide oral histories (Charlton, Myers, & Sharpless, 2007) beginning with the question "How did you get into the fishing industry?" (Appendix C). The use of general, broad questioning helped to encourage candid dialog with participants about their personal stories. Participants directed the dialog, often lending insight into tangential but important issues in the process. Due to the flexible nature of oral histories structure, participants could discuss anything that seemed connected or relevant to them personally. Colburn and Clay, 2012, state the relevance of collecting oral histories builds a

“contextual framework for understanding qualitative results”. These oral histories were modeled after the definition presented by the Oral History Association which describes the process as an opportunity to gather an in-depth account of a person’s experiences and reflections (“Principles and Best Practices,” 2009).

The questions for the semi-structured interviews were role specific and applied to fishermen and fishermen's wives (Appendix D) or young adults fishermen often representing the younger generation, and fishing family members (Appendix E). The interview focused on capturing insight into the perception of resilience and graying as well as family relations, roles, and environmental or management change. Participants were given the option of having the full transcription and video of their interview sent to them via email if preferred; none chose to take this option.

In addition, when possible, the researcher attended community meetings and gatherings to establish community context on how to interpret interview data (Bernard, 2011; Robson, 2011). The main event where participant observation took place was at a Pacific Fisheries Management Council community meeting in Newport where the topic of discussion was the groundfish rationalization program. At this meeting on September 29, 2016, commercial fishermen had the opportunity to present comments to a PFMC panel in regard to the catch share program.

Data Analysis

MAXQDA12 was used to run grounded theory qualitative analysis on all interview transcriptions (Auerbach & Silverstein, 2003; Strauss & Corbin, 1990). The grounded theory approach to data analysis utilizes an inductive-coding framework to extract repeating ideas and themes from data (Miles, Huberman, & Saldana, 2014) to produce a final product as a thematic narrative. The coding process includes three rounds of analysis that extracts details, then generalizes themes. The first round of coding creates groups of relevant text sorted into

general thematic categories (i.e., motivations, changes to industry, barriers and challenges, aging and family relations, and community profiles and impacts). The second round of coding expands upon the codes to include more detailed aspects of the text themes. This aided in determining if there were any underlying themes that were initially missed in the first round of coding. The final round of coding consolidates and organizes the codes. This refines the themes and produces the final narratives behind each theme.

Throughout the coding process, inter-coder reliability was practiced. Three other social science researchers independently coded a sub-set of transcriptions; these results were then compared to the original analysis to ensure emerging themes were similar across researchers. This process increased validity and reliability of data analysis (Auerbach & Silverstein, 2003; Bernard, 2011; Miles et al., 2014; Robson, 2011; Ryan & Bernard, 2003; Strauss & Corbin, 1990).

Ethics

Standard Institutional Review Board (IRB) protocol was followed, and acceptance was granted for the participation of human subjects in this study. Due to the demographic configuration of participants, this study did not interview any vulnerable populations. Prior to data collection, ethical training was required to ensure the appropriate consent, confidentiality, and data collection and storage parameters were followed.

In accordance with IRB protocol, participant consent was required for the recording of all interviews, both audio and video. The goals and intentions of the study were explained in full, and an opportunity to ask questions was given to every participant before pre-approved IRB consent form was distributed (Appendices B). Participants were then given both the NOAA consent form (allowed for the upload of oral history video, audio, and picture files on the public VFWC website) and verbal consent was obtained for the semi-structured

interviews which included contact information for later questions (Appendices A & B). Both participant and researcher signatures were collected for oral history interviews (Appendix A). All interviews were voluntary, and participants had the right to decline recording. An option was also presented to each participant to be interviewed anonymously, and to opt out of the VFWC oral history project. Participants also had the right to remove their oral history data or interview consent freely, at any time.

CHAPTER 3: RESULTS AND DISCUSSION

Several themes arose from the analysis of the data collection from research participants in both Newport and Port Orford, Oregon. All participants were divided into two broad categories, older-generation and younger-generation, to assist in the determination of results and themes. As described in the previous chapter, categories were determined by participant age and fishing experience with seasoned fishermen (50 years or older) categorized as part of the older-generation, and participants younger than 50 years old as part of the younger-generation. Fishery experience was also accounted for, with nearly all participants in the older-generation having greater experience in the fishing industry than those in the younger-generation.

This chapter begins with a general overview of the perception of graying in the community of interest as observed by participants in both Newport and Port Orford, Oregon. More general researcher observations are briefly mentioned leading to the discussion of major narrative themes that were discussed by participants in relation to graying.

General Perceptions of Graying

Graying was primarily witnessed in relation to changes in management and social influences within the industry, and was not directly expressed as an independent concern for many participants. Various participants mentioned the impacts of changes to natural resource regulation and social norms throughout interviews.

“I mean everything changes I think. But the fishing industry has changed quite a bit regulation wise, like my early days of fishing was some of the last times of the ‘anybody that wants to buy a boat and go fishing can’. [Now] it’s so regulated and the permits are so variable and hard to come by that it’s kind of a hard industry to get into.”

A generational divide was evident between older and younger fishing community members in both geographic communities. Both younger and older-generations perceive graying, but there is discrepancy in the severity of the issue. Most youth agree that graying is taking place within fleets, but the recognition of this issue is described differently than by the older-generation. Older-generation fishermen view graying as a more serious threat to the industry than younger-generation fishermen perceive.

“There’s those old guys that are moving out of the industry or passing and they are worn out, they’re tired. And then there’s the 30-somethings that are coming in now and there is a gap there. It’s either they are really old or they are really young.”

“I think old men can shrimp. Old men can tuna fish, maybe salmon fish.”

This last quote highlights the awareness that the fishery harvested and gear type used also influenced perception of graying. For example, participants noted that the Dungeness crab fishery as well as other pot fisheries were the most intensive therefore requiring a younger crew. In contrast, the shrimp fishery and other trawl fisheries were deemed more accommodating for older crew members. While the dangers associated with fishing are well-documented (Håvold, 2010; Lucas, Kincl, Bovbjerg, & Lincoln, 2014), hazards associated with crew age are inconclusive, and require further research.

The results of this study are not unique to fishing-dependent communities and are in alignment with impacts of changing regulation on communities involved in both marine and terrestrial industries (Blomquist, Nordin, & Waldo, 2016; Egan & Taggart, 2004; C. B. Flora, 1990; C. Flora & Flora, 1990; Garay & Bernhardt, 1998). Since the industrial revolution, rural communities have diversified their markets out of necessity, and have decreased dependence on natural resource industries such as logging and agriculture (C. Flora & Flora, 1990). Similar to the fishing industry, both of these sectors have also witnessed

aging workforces primarily due to low youth recruitment and diminished employment opportunities (Egan & Taggart, 2004; C. Flora & Flora, 1990). This has had significant impacts on the rural communities which depend on these industries, and is reflected in this quote from a research participant from Port Orford:

“Loggers got run out of business. Fishing got regulated. Family people left.”

The impact of declining rural industry has significantly decreased the financial capital⁸ within these communities, expediting the outmigration of youth and families (Donkersloot, 2005, 2016; C. Flora & Flora, 1990). Participants voiced universal concern that the removal of the fishing industry from their communities would shift them past the tipping point of “no return,” and the communities would no longer be able to sustain their cultural and financial livelihoods.

The remaining results and discussion are categorized into three broad themes (and numerous sub themes) such as individual motivations and career trajectory, shifts in social norms, and privatization implications. Data was analyzed across both study locations to synthesize these themes and subthemes, despite some variations in geographical perspectives. Thematic interpretation allows for an in-depth analysis and discussion of a specific aspect of the results of the study. Therefore, this should not be considered an exhaustive view of the topic of graying within the two communities of place.

Individual Motivations and Career Trajectory

⁸ Flora and Flora describe financial capital as “the financial resources available to invest in community capacity building, to underwrite businesses development, to support civic and social entrepreneurship, and to accumulate wealth for future community development.”

Commercial fishing is an inherently unpredictable and challenging career choice that requires its workers to be adaptive and resourceful. Individual identities within fishing communities are often shaped by this lifestyle and are unique to fishing culture and its generational values (Pollnac & Poggie, 2008). The dangers and stress associated with the commercial fishing career path became a consistent topic of conversation among participants in this study.

The motivations for several fishermen to put themselves in harm's way were discussed at length. The same motivational subthemes repeated across interviews and communities of place. Many of these motivations are tied to economic markets and family heritage, yet some motivations go beyond tangible rewards and connection to family. Participants often expressed a connection to the ocean in a deep, vital sense or an aversion to modern land-based occupations. It appears that occupational motivations may be a source of influence on youth entering the commercial fishing industry, making occupational motivations directly connected to the graying of the fleet.

Money

The economic incentives associated with fishing were the strongest motivator for individual participants to be a part of the commercial fishing industry. Fishing was recognized as historically being an occupation that allowed participants to sustain a respectable income, provide for their families, and allow for upward financial mobility, all without requiring a college or high school degree.

"It's a pretty good paying job for somebody without an education. You don't need a college degree to go work on the back deck. You need to be big strong and able to push things around and work safe. You need to be smart, but there're no qualifications for it. So somebody can say 'hey' I don't really like sitting in a chair. I'll go work with my hands. I'm good at that. I can work long hours. Let's go fishing. So there's kind of that

rough and tumble aspect to it and the payoff is usually pretty good”

“You could make as much money as you wanted...as hard as you wanted to work. And that was basically the attraction to get in.”

This perspective is to be expected, as commercial fishing is pivotal to the economic stability of many communities along the Oregon coast. Commercial fishing was discussed by participants as generating nearly 35% of Port Orford's local economic activity, and Lincoln County reports that 10% of county economic activity can be accounted for through commercial fishing (The Research Group, LLC, 2014). Much of this fishing economic revenue in Lincoln County comes from the county's main fishing center, Newport (Package and Conway, 2010; The Research Group, LLC, 2014). Participants indicated the ‘financial reward of fishing’ as the main reason they continued their career in fishing. Rather than changing occupations after a set number of seasons or years, as many of them expected, they continued in the field because they felt a connection to fishing and the way of life that it provided for them and their families.

“Well to be perfectly honest with you, to make money. That’s the bottom line. I’d like to say I did it just because I love the ocean and all that, and I think there are those that say that, and I’m kinda envious of them. But for me, honestly, it’s a business. I go out there every day. I’d rather be here with those guys [gesturing to children] to be honest with you. But it’s a pretty darn good way to make a living, you know. [...] It’s one of those things that if you don’t want to keep doing it, you shouldn’t start. Because you start making money and then the next thing you know you start buying things and you have bills, and then you’ve gotta keep making money. And next thing you know, you’re old and gray and the kids are grown up and that was your life. I think that goes for most anybody and I think that’s a pretty common story around here.”

Vessel owners respected the capacity for one boat to support multiple families and provide substantial wages to all crewmembers. Each boat was

credited as representing an individual small business, because those businesses sustain families and the communities wherein they reside. This created a great sense of accomplishment among vessel owners and their families as it gave them the justification to feel that they were directly contributing to their community.

“I'm kinda proud of the fact that we have 10 employees and each one of them makes a living wage job. It's not like they have to work 2 jobs to make it work. They make enough working with us to feed their families and put a roof over their head, raise their kids, it makes us feel good. Between the 3 boats we employ quite a few people.”

The impacts of regulation change have been understood to serve as threat for fishermen trying to build financial capital within the industry. Exploding costs to lease quota along with higher fuel and overhead expenses were mentioned in previous research (Clay & Olson, 2008), and this came out in this study when participants described changes in how much crew can be paid.

“Used to be the money. Now I don't think you can make as much money, the crews don't, as they used to. The percentages of the boats make to their crews are about the same, fuel has gone higher. Some boats pay for the fuel and pay the crew less. Some boats take fuel off the top and pay the crew more.”

“Yeah, our son, when he went fishing it was to make money to do something else. It's a good way to make some money, but to do it for a livelihood, it's just gotten a little more complicated than it used to be.”

Family Heritage

Community and individual identity are highly tied to the fishing industry in both Newport and Port Orford. Participants recognized the significance of family fishing heritage as a main motivating force for entering the industry. Both male and female participants described the gravity of growing up in a fishing family or

community, and how that influenced their continuation into the industry. Male participants often recollected fishing as children with other male family members.

“Well my dad was a fishermen. He started with his dad in the mid 30's out of Garibaldi. He fished during the depression and then during the war he worked at the shipyard at Swan Island building liberty ships until after the war. And then, I guess it was about the mid 50's that we moved to Newport and he started fishing again. He was also a diesel mechanic, so he had both jobs. Starting in about 1954-55 he started running a pilot boat out of Newport also. And he ran the pilot boat until the end of the 60's. He bought the first boat he bought for himself in 1958 or 59. I started fishing with him when I was 8 years old. I fished every summer from that time till I was actually out of college; other than one year that I spent fishing in Alaska in between my college years. Then I spent all the time with him the first trip with the boat we went to San Francisco right from Newport. Fished the whole summer down there and then worked our way up the coast.”

“My dad was a fisherman, his dad was a boat builder. And I don't know, it's what my dad did and occasionally kids want to follow their dad around so that's how it started.”

Other participants did not come from a fishing background but had family members who worked in support industries such as boat building. The presence of family in the on-shore support sector seemed to also influence motivation to enter the industry. The connection between employment in the fishing industry and on-shore support industries such as welding, boat building, and diesel mechanics work was also apparent in many interviews.

“I knew when I was five years old I wanted to be a fisherman. My dad worked building on the dock and dredge and he brought home some crab one day that he caught off the end of the dock. And I can remember playing with wax crab pots and I designed a boat out of wood and I wanted to be a fisherman.”

Despite the consensual appreciation of fishing in many of their families, female participants with fishing lineage often expressed hesitation to be married

to a fisherman or continue in the industry due to vast amount of time their spouses would be away from home while at sea, and unavoidable occupational dangers.

“You know, um, of course I married a fisherman, which you know I could have just shot myself in the foot and put myself out of my misery. But the industry itself is fascinating; it's hard. I can't imagine marrying into the industry and then, not being interested in all the small finer details that really, um, are reflected in your business.”

Fishing is a way of life in many rural communities along the Oregon coast. Much like the farming industry in the past, fishing is characterized as a conglomeration of small fishing businesses. Historically, they have been family run, encompassing men, women, and children to support the success of the business (Blomquist et al., 2016; S. Calhoun et al., 2016; S. M. Calhoun, 2015; Lange et al., 2016). Pressure for youth to carry on the family legacy is common in rural resource-dependent communities (Blomquist et al., 2016; Creighton, Blatner, & Carroll, 2016; Curran-Cournane, Cain, Greenhalgh, & Samarsinghe, 2016). Participants shared a diversity of stories explaining their connection to fishing with family lineage as a clear motivating factor for their continuation into the industry.

Freedom and Maritime Connection

The ocean has often been referred to as the “Wild West” or the “Last Frontier”. The entwined sense of freedom and independence that is endemic to the marine environment also applies to commercial fishing, and has been recognized as a motivating force for fishermen entering the industry. This freedom was also communally understood as an alternative to “being stuck behind a desk” in some white collar, land based occupations.

“I guess the attraction is independence. Where you’re not going to a corporate office. It’s very independent. You’re your own boss. You do what you want. You work, you don’t. If you make it, you know, it’s all on you. And you’re not having to answer to anybody except the environmental groups and the government [chuckles]”

Participants also noted that the freedoms that motivated many to enter the fishing industry are being threatened by regulation. The implementation of changing regulation has dictated where vessels fish, how long they can be at sea, and how much product they can catch (S. M. Calhoun, 2015; Carothers & Chambers, 2012; Hébert, 2014; Langdon, Alaska, & Governor’s Study Group on Limited Entry, 1980; Pinkerton & Davis, 2015). Some participants allude to the importance of independence and freedom, then changed the topic to discuss how these motivations may be threatened or diminishing with time. Older-generation fishermen decried this diminished freedom most often during interviews:

“Well it [motivation] used to be independence. You do what you wanna do. And the traveling around and that...We used to travel from the Mexican border to the Canadian border fishing and it was not problem because if you wanted to do something different, you just went and did it. Well now you can’t do that so we are pretty much stuck.”

Some individuals addressed a sense of connection with the ocean as a motivation for entering and continuing their fishing careers. This connection was described as inciting a sense of liberation from land-based society, grounding participants mentally and physically.

“When I went fishing I felt this tremendous sense of connection, I felt for one of the first times like I understood where I am in the scheme of things. To me, it’s an archetypal experience, it’s the basic same old story, you know, of somebody who goes from the known into the unknown and brings back something. In this case, an experience, knowledge, and wild protein. It’s a very,

very old story. Participating in that was more rewarding than all of my academics ever had been. It's very simple and very primitive and I really enjoyed that. I just felt connected, you know, being a hunter-gather has some real satisfactions and I didn't grow up anywhere near that, but I felt connected to it. It's valuable, I hope that individuals can keep experiencing that and I think that's it important to have at least some members of our culture act that out and continue acting that out. It takes a lot of space to do this activity. Hunting and gathering implies space so it's very important that we have spatial and temporal opportunity to prosecute this stuff. Anyway, it was a great connection. Also, I probably happened to be ready to get serious about doing something and I was standing on a boat, but those are some of the reasons I think that I was drawn. And it's just beautiful. I feel really, really fortunate to have come across this. I mean, I could be doing a number of other things, but I stopped here and have work that I find satisfying.”

Others mentioned fishing as an activity that allowed them to be removed from land-based matters, allowing them to focus on the beauty and satisfaction of fishing. This sense of connection and freedom was depicted as substantial to fishermen’s well-being⁹ and motivation. It was described as being threatened by modern technology and regulations (including vessel monitoring systems and observers).

“This boat's equipped with a vessel monitoring system, which is essentially an ankle bracelet. We're not confined to our home, but wherever we go, we can be tracked and any vessel that is involved in any of the groundfish fisheries off this coast has this.”

“When you're out on the ocean, you're just, it's so simple, as there aren't all these distractions. Especially back in the day when there wasn't cell phones and things, it was just the marine operator and so you were really isolated as far as nobody calling and things. So it's a little different now being out on the ocean, you can call people on your phone and so it's a little different in

⁹ Smith and Clay (2010) describe well-being as “includes subjective elements that indicate how a condition is perceived by participants, as distinct from an objective and independently observable assessment of conditions.”(Smith & Clay, 2010, p. 158)

that regard. But yeah, it was one of those things. I didn't want to come back to land once I was out there."

Fishing has clearly created a unique cultural identity within coastal communities. This culture was discussed extensively during interviews and went beyond individual motivations to include aspects of age, family background, and future hope for the industry. The occupational flexibility of the fishing industry provides rural coastal communities with a source of livelihood that caters to individuals. Motivations target traditional work while concordantly supporting a living wage (Ringer, 2016).

Shifts in Social Norms

A theme that emerged from this research was shifts in social norms. It's well documented that social norms are constantly in flux and can be molded by periodic events as well as chronic inputs (Cialdini & Trost, 1998; Elster, 2000; Ostrom, 2014; Sunstein, 1996). The social construction of the fishing industry is no different, although some changes to social norms are now being recognized within the community as threats to the continuation of the industry. Shifts in social norms arose in the data from this study though discussion of diminishing work ethic, shifts in social pressures to pursue higher education, and shifts in family influence.

Work Ethic

One boat owner highlighted the topic of youth recruitment and work ethic in the industry concisely:

"Trying to find people who are willing to get up in the morning and go to work, show up to work on time, and do the work. There's a certain, definitely a different, work ethic."

Diminished work ethic was noted by nearly all vessel owners during interviews: a major difficulty is finding crew members with the appropriate drive to

work hard and avoid drugs and alcohol. One study participant compared work ethic by generation; older-generation fishermen seemed to work harder and be more invested in their position on a boat than younger-generation fishermen.

“I see a huge change in the way people think; in the younger people compared to the older guys. The work ethic has changed from what it was. Worth ethic used to be way more than it is now. It's hard to find guys now like it was before.”

Although only mentioned specifically twice, the topic of general entitlement of younger-generations was a consistent topic of conversation. Much of this criticism was attributed to changes in at what age youth are expected to acquire jobs, as well as an overall entitlement of the younger generation.

“We have a generation of entitlement. That is probably the best word to describe it. You know when I was growing up we were working when I was 12 years old. The generation now doesn't even think about getting a job until they are 16. I mean it is a big difference; it's hard to get them off the couch. People don't seem to realize that in this country right now. I don't know if you see it in other industries like you do here. But where it takes a lot of self-motivation – industries probably like agriculture, fishing, timber...your nuts and bolts, have to be self-motivated, work hard method -- you just don't see that like you used to. It's alarming. I hear it in other industries, welding and stuff. They are having problems keeping guys or finding guys. All of your ship yards especially. They are having terrible problems with that. It's a generation that would rather push buttons on a computer than get their hands dirty.”

Vessel owners were not alone in their sense of a diminished work ethic among younger-generations. Deckhands also recognized the diminished work ethic in many, new hires they found themselves working alongside. Many crewmembers noted the difficulty of working on a vessel with “less-driven” crewmember and how it adds upon the crews workload that the crew is responsible for. This increased workload also impacts morale on a vessel and can negatively impact the production and economic success of a fishing trip:

“I mean there’s a contract but you can’t force somebody to go out there. What are you going to do? I’ve had somebody lay in the rack for 48 hours, 62 hours, while we are out there working around the clock doing their job and ours. And their just like - nope, let me know when we get in.”

Diminished drive and work ethic may also be directly affecting the graying of the fleet. One boat owner expressed his inability to find a local buyer when he was ready to sell his vessel and quota, regardless of his generously offering personal financing and training opportunities. The owner resorted to selling his boat, gear, and quota to a non-local fishing corporation. The following quotes highlight the perception that participants shared on work ethic in younger-generations and the complications it places on the graying of the fleet:

“Four to five years ago I tried to train these guys up but they weren’t paying attention enough. They didn’t realize how dangerous this was. And the last guy that I actually turned the boat over to for the last year, I was still black coddling and crabbing...he damn near... I mean I never flipped the boat over and lost all my pots. Not once in 40 years. But he did it on his second day taking gear out last year. I took it as lesson learned; a hard lesson learned.”

“It’s graying for sure. I think part of it though is it’s hard to find a... The younger-generation isn’t as hard working as the older-generation. They’re not as physical. It’s hard to find a kid that... It’s a tough fishery! I mean to work, to stay up, to do the physical labor, it’s a tough livelihood. You make money, but it’s not easy. I think it’s hard. This generation is just a different generation. I think that they’re a little softer than our generation.”

Current research taking place in Alaska is discovering a similar perception of diminished work ethic in newcomers entering fleets surrounding Kodiak Archipelago (Ringer, 2016). It should be noted, however, that the sense of diminished work ethic has been similarly observed in both white and blue collar jobs in the general workforce, and does not appear to be a fishing-specific

phenomenon (Abbas J. Ali, Thomas Falcone, & Ahmed A. Azim, 1995; Lipset, 1990).

Youth Pathways

Youth Outmigration

The intergenerational aspect of fishing in both Port Orford and Newport has allowed for the development of local ecological knowledge and a pride in the occupation. Participants discussed the sustainable continuation of the local fishing industry as a critical factor in the resilience of these coastal communities, yet the outmigration of youth from smaller communities to areas of greater opportunity, such as cities, is not a new concern for rural communities (Donkersloot, 2011). Newport and Port Orford are no different. Connections between youth outmigration and graying is distinct, directly decreasing the participant pool from which the fishing industry can recruit new members (Garay & Bernhardt, 1998; Ringer, 2016; Russell et al., 2014). Interview participants in this study described the impacts of this outmigration of youth vividly, with Port Orford participants seeing the greatest impact:

“Kids left. The economic opportunity kinda dried up in these small rural towns and the kids go to the city. There used to be around 3,000 people here I think in the 30's and 40's. And then it dropped down to 1,000. And we have been here 40 years and they changed the population sign from 1,000 to 1,200 about 2 years ago. So we are booming now [chuckles]. We have gained 20% in 40 years. It's amazing [chuckles].”

Older-generation fishermen also noted the occurrence of “pulses” of incoming fishermen, indicating cohorts of fishermen entered the industry as the older-generation left the workforce, or, when the commercial industry becomes highly profitable. These pulses are no longer recognized to the same extent as they were historically. This change was attributed to the outmigration of youth, and the seasonality of workers in alignment with university schedules.

“Fishermen always come in pulses. When I started there weren't any young fishermen in it. [...]There's these pulses of people as the fishery's successful, like the salmon fishery was real successful.”

Education Expectations & Family Influence

Many interviewees added that although they originated from an intergenerational fishing family and personally fished as a livelihood, they would not encourage their children to pursue a career in commercial fishing.

“The only reason I didn't want them [his children] to [fish] was because I could see salmon fishing was on the decline. Crabbing was good, but I just had seen the fisheries going downhill. There're just so many rules and regulations for newcomers. And the port down here, I don't think is safe anymore with the jetty so I didn't encourage them. They did go out with us, but I told them I never wanted them on the boat, and the boat we did have, I kind of had it burned so they couldn't go. I mean that's a sad thing. [...] But my oldest daughter, she wanted to commercial fish, but that's not where I want her to go.”

Participants who discouraged their children from fishing often cited regulatory change, time demands away from home, and the inherent danger associated with fishing as drivers for their disapproval. Participant parents communicated the sentiment that they wanted more for their children, indicating they believed there was opportunity for their children to move into less labor-intensive occupations. The following quotes highlight some factors that participants communicated as discouraging influences for them as parents:

“No, I did not encourage my son to go into fishing. I told him ‘no, the industry was it's a tough life. It's not a simple life. A lot of time away from home, a lot of time away from families.”

“I'd rather have him not get into fishing. It's a lot harder nowadays. You have to have either somebody who has a boat, or a way into it, because you can't just go buy a boat and start fishing now because with the way permits and everything are. It's

tough, but we'll see. I don't think he's going to carry on our little family legacy."

In addition, there was a presence of encouragement within some larger intergenerational fishing families for children to carry on the family legacy and continue the fishing business. Often this encouragement was mentioned by adults who described a connection to fishing during their youth. Other participants noted the direct desire for their own children to carry on the family business.

"I love it. For me, I feel like I'm making [my dad] proud by contributing and so I try to look for every opportunity that I can to try and kind of carry the torch of how I think his mantra was about fishermen and fishermen's families and the industry. It's just something I'm really interested in."

Other interviewees had little interest in their children moving on into the family business, and displayed an indifference as to what occupation their children chose to pursue:

"He will be around it, but I'm not going to say to him that he should be a fisherman or even suggest that really. I think he needs to figure that out if he wants to be a fisherman. He'll know there's opportunity there. I mean, he'll have a heck of a lot more than I did as far as starting out in the fishing industry; if he wants to... he could do whatever he wanted. What he'll choose is hard to know."

The expectations of youth to pursue higher education has been transformational in coastal communities where a high school diploma is now viewed as a below minimum requirement for most occupations (Ringer, 2016). In this study, the encouragement to pursue higher education through a university degree or trade training was a common theme among participants who are parents, as well as younger participants who grew up in fishing families. The perceived importance placed on achieving a degree or certificate greater than a

high school diploma was emphasized as giving children an alternate plan in the event fishing no longer provided a sustainable livelihood. Advanced education was also referenced as offering children the expertise needed to understand changing regulations and the business oriented aspects of the modern commercial fishing industry.

"I look back on when I got out of high school thinking...well my parents go "you can be a fisherman but you have gotta go to college first, you have gotta have a college degree before you can come back and fish." Because you don't know what's going to happen with the fishing industry, you have gotta have something to make a livelihood out of if you can't fish."

Broad social change including diminishing work ethic and shifts in education expectations inform youth perception of rural industries and opportunity (Donkersloot, 2011). Additionally, perception of decreased opportunity and viability in the fishing industry may reduce the number of youth aspiring to become part of the industry (Blomquist et al., 2016). This coincides with a similar predicament in which young adults must combat conflict between place-based family attachments and the perception of low opportunity in home communities (Bjarnason & Thorlindsson, 2006; Blomquist et al., 2016; Kirkpatrick Johnson, Elder, & Stern, 2005).

Privatization Implications (Rationalization)

Another major theme that arose from the research was the social impacts of fishery privatization. This is in direct alignment with literature regarding catch share and rationalization programs nationwide (Carothers, 2008, 2010; Clay & Olson, 2008; Pinto da Silvia & Hall-Arber, 2008; Russell et al., 2014) and internationally (Chambers & Carothers, 2016; Jacobsen, 2013; Olson, 2011). Participants in this study expressed many concerns about the recent implementation of catch shares in the Pacific Northwest and emphasized the barriers and inequities privatization created in the industry. **Changes in**

management, particularly the implementation of catch shares arose as the most significant theme during data collection and was referred to in nearly every interview. Many participants neglected to mention graying as its own independent entity, but rather discussed graying and graying implications as directly attributed to privatization.

Barriers to Entry

Participants in this research broadly discussed the profound and persistent barriers resulting from catch shares, including obstacles preventing the entry of newcomers into the industry and the creation of inequities within communities. These barriers directly inhibit younger-generations from accessing fisheries and manifest primarily in the form of financial barriers and barriers to upward mobility; often cited by other studies (Carothers, 2015; Ringer, 2016). Prior to the implementation of rationalization, fishermen attributed success to hard work alone and considered their vessel, gear, and operating costs to be their primary investments. Since the catch share implementation, individual quota value has risen exponentially and has rapidly become the main cost for fishermen in this study and others (Carothers, 2011; Carothers & Chambers, 2012). This escalation in cost is a result of economic market mechanisms which consolidate the resource and increase demand (Høst, 2015). Two older-generation fishermen describe their perception of rationalization through the lens of financial barriers to incoming fishermen:

“When I was starting out you needed a piece of equipment and some drive. That’s what you needed, that was it. You needed a boat and a willingness to put your head down and shove. Now you need permits. And the permits cost more than the boats do. It’s asinine.”

“Because having the right to go to work is worth more than the boat. You can have a boat but if you don’t have a permit to go fishing then you’ve got nothing.”

Many study participants also shared similar concerns due to the market for quota increasingly impeding access to fishing. In essence, as quota increases in price over time, pathways into the industry are severely obstructed without substantial financial support.

“They restricted permits on a lot of the fisheries, it made them very, very valuable. How does a young person buy one of those or get into one of those?”

“It's much more difficult to begin now than when I did when I was 21, 22... much more difficult. The cost is much larger. Because the consequences of limited entry and catch share management makes it tougher, not impossible, but much harder. I think we need to try to aid that person a little bit.”

Changes to occupational trajectories within the fishing industry have been documented internationally in both New Zealand and Iceland where consolidation of fishing fleets through quota systems has centralized fishing quota to a handful of large corporations (Carothers, 2008, 2013; Carothers & Chambers, 2012). Although the interview protocol in this study did not include questions on perceptions of international regulation, the implications of international privatization often emerged during interviews.

“I mean the permits were worth more than the boat and all the equipment now. Just to be able to fish. And it's getting worse, and worse, and worse, because pretty soon, as in New Zealand, [work to] it will all be in the hands of a few wealthy people that distribute the people that work for wages. That's what's happening.”

Impacts from fishery privatization measures have also been recognized as limiting shore-side industry adaptation capacity. The need to adapt to changing regulation was stressed by one shore-side industry representative who later described a decline in fishing support industries as a result of catch share consolidation of fleets coast-wide:

“This is very volatile business as far as fishing regulation to what do we do? How do we plan for the upcoming future? How do we change with the industry as it changes?”

System Inequities

General management-system inequities were also explained in relation to access to fisheries and financial assistance into retirement. Interviewees discussed generational inequities that have been perceived since the implementation of catch shares. Fishermen from the older and younger generation experienced unequal access owing to family ties. Those who were born into a fishing family that were allocated quota during the original distribution process are viewed as having an advantage over fishermen who did not have quota within their family previously. This coincides with findings in Alaska of inequities between the “haves” and “have-nots” of fishing quota, and generational disconnects non-fishing family youth are facing from quota ownership (Ringer, 2016). Participants recognized this general inequity whether they came from intergenerational fishing families, or if they were first-generation fishermen:

“Yeah...it’s not good for the generations to come; unless you’re like my kids and you’re going to inherit it. But you know with the government there’s no telling what’s gonna happen.”

Participants are also recognizing shifts in the overall trajectory of fishing careers. This topic arose when individual aspirations within the industry were discussed. Many participant crew members who did not have ownership of quota or a vessel, lacked desire to work towards becoming a skipper or vessel – owing to the difficulty and near impossibility of gaining necessary resources to be successful (such as quota, gear, a vessel, etc.). Instead, they saw fishing as a short-term opportunity to achieve financing for future non-fishing related aspirations. This is in contrast to participants recalling the ease of becoming an independent fisherman prior to the implementation of catch shares. Specifically, they referenced the ease of access to the salmon industry in the 1960’s as an

entryway for new fishermen. It should be noted that participants indicating little desire to become owners were often not part of intergenerational fishing families.

Research participants noted that fishermen are working longer to better support themselves into retirement age, further reducing access to what would otherwise be passed on to younger-generations of workers. The commodification of quota along with leasing capabilities has decreased the likelihood of quota owners retiring from fishing once age or physical ability historically warranted, is evident in the other research as well (Caban-Martinez et al., 2011). This has changed the retirement trajectory for quota owners who may now receive continuing financial support from leased quota regardless of physical labor ability. The following quotes reinforce the value of quota as a retirement plan within the fishing industry and the constraints this puts on future generations:

“Partly because of regulatory changes in the generation previous to mine got the ownership of a lot of the permits and stuff like that. And that stayed with them whereas before that when you got older and you said you didn’t want to fish anymore, it was the next guys turn, you’re out of it, you have nothing to do with it anymore. But now, you’re older, you don’t want to do it” anymore, but you’re still going to own the resource and lease it to the next guy for a while.

What I see are barriers in terms of owning boats. And in groundfishing, they won't be able to. Nobody is selling their quota shares, their permit, to anybody. That's the old guys, like me, retirement fund. The guys' that have kids that are fishing, they're doing quite well.

Interestingly, although most participants expressed disappointment in many of the inequities within the current fisheries management scheme, regulation was accepted as a necessity in ensuring sustainable and long-term productive fisheries. One young fisherman from Newport recognized the

importance of fishery regulation, as well as Newport's unique resilience to change:

"We need regulations for sure. There comes a point where regulations are starting to outweigh what we can do. I mean there needs to be a balance there for sure, but it's not...I don't think it will affect Newport unless no fishing, you know?"

General agreement from participants indicated that commercial fisheries require a method of harvest and access limitation to maintain sustainable and profitable fisheries. This attention to resource stewardship was a main focus for most participants. However, privatization programs were fiercely called into question by participants as a successful regulation method, not just due to inequities in quota use, but also due to regulation favoring larger fishing businesses. Preference away from small, independent family fishing businesses was noted by multiple participants in this study, one of which stated *"being an independent fisherman just went away."* This favorability has been perceived as reducing opportunity for smaller fishing businesses, and independent fishing businesses without corporate ties.

Place-Based Context

Geographic location harbors a significant importance in the culture, values, and traditions surrounding the fishing industry and other marine industries (Brakel, 2001). The results of this study are not generalizable and should not be applied to other coastal communities. This information does inform understanding of how regulation impacts all rural, natural resource-based industries, and dynamic societal norms, and the effects this has on cultural and economic sectors. This research could, however, be seen as a model for further investigation into larger, coast-wide studies on graying of the fleet as this could result in a better understanding of how the aforementioned barriers are perceived differently based on community of place.

The impacts of these barriers were explored in the context as having disproportionate impact on ports of different size and characteristics (Ringer, 2016). Recruitment of youth into the fishery was recognized as a greater concern for vessel owners in Port Orford than in Newport, although the quality of potential crew was called into question in both communities.

Regulation implications were also discussed as having place-based impacts for communities. Financial barriers of privatization were discussed as having escalated impact on Port Orford and other smaller ports such as Gold Beach and Florence.

“They are driving out the small independent businesses...they are out. And they’ve got the rationalization. Each individual has so much of the quota. And you can lease that out or you can sell it. And for the smaller ones, it just makes more sense to just sell it. You know, they just can’t afford to stay in business. They make more money by selling or leasing it out than they would trying to catch it themselves.”

Recognition of variation in both individual experience and geographic location of communities is critical, not only within Oregon’s coastal communities but both national and international fishing communities. This study discloses how variations in community characteristics between Newport and Port Orford (Table 3.1) have created a spectrum of impact varying by place. Using place-based context to better understand the human dimension of coastal fishing communities, stakeholders may better understand EBM (McLeod & Leslie, 2012), its core concepts, and general social ecological systems thinking.

Table 3.1 – General fishing characteristics of study communities Newport and Port Orford, Oregon.

Contrasting Communities		
Characteristic	Newport	Port Orford
Relative port size	Large	Small
Relative boat size	Large	Small
Infrastructure	Bayfront docks	Lift Crane
Fishing Economics	High-volume processing	Exported processing
Intergenerational business	Common	Perceived as common, slightly common
Limited entry spaces	Larger distance from Cape Perpetua marine reserve	Close proximity to Redfish Rocks marine reserve
Seascape	Wider continental shelf	Narrow continental shelf
Gear types	All gear types	Absent trawl fishery, primarily pot or hook and line

CHAPTER 4: CONCLUSION & IMPLICATIONS

Aim of this Study and Overall Results

Fishermen are not newcomers to change, and their ability to adapt has aided in the continuation of intergenerational fishing businesses in the United States. Nevertheless, in the current environment both fishermen, and the communities that house them, are in a state of transformation different from what has been perceived in the past. This disruption has been attributed primarily to current fisheries management that has constrained the fishing industry in an attempt to reduce fishing pressure and allow for regrowth of fish stocks. In conjunction with privatization and other management strategies, changing global markets and a changing environment are also putting pressure on fishermen and their communities.

This study highlights the transformation in opportunities and career trajectories within the Oregon commercial fishing industry, specifically investigating community of interest perceptions of graying in Newport and Port Orford, Oregon. Interview participants primarily recognizing graying of the fleet through the complex lenses of fisheries management impacts and societal complications. As seen in many modern industries, changes in workforce demographics including an aging workforce and a shrinking labor pool (Garay & Bernhardt, 1998) were also recognized. Overall, graying is perceived as a threat to the fishing industry and community resilience in both Newport and Port Orford. However, nearly all participants expressed optimism for the future of fishing on the Oregon coast whether it be in terms of the continuation of intergenerational family fishing businesses or the commercial fishing industry in general. Interestingly similar concerns were voiced in both communities of place with little variation between locations in terms of graying perception. Although, the current impacts of regulation were described as impacting both communities

disproportionately, with the regulatory complications impacting Port Orford and other small ports greater than larger ports like Newport.

The results of this research indicate that a suite of complex interactions contribute to the challenges faced by modern commercial fishermen and the communities where they reside. Additionally, management decisions based solely on economic factors lack crucial insight into commercial fishing as a social-ecological system. In actuality, fisheries management is more accurately the management of *people* and their interactions with the marine environment. Both economic and socio-cultural characteristics must be taken into account when designing and evaluating regulations and their impacts, and conducting vulnerability analysis.

Limitations and Future Research

This research has served as a significant learning experience, yet undoubtedly it could have been conducted differently given ample time, funding, and knowledge, although as stated by Calhoun (2014), “that would defeat the purpose of a masters.” Nevertheless, limitations should be acknowledged in the interest of improving future research.

The grounded theory approach (Auerbach & Silverstein, 2003; Birks & Mills, 2015) upon which this research was based began with little guidance and direction outside of assessing the perception of graying in target fishing communities. With time, the project evolved into becoming more targeted according to common themes. To best encourage growth and to further future research projects, additions and improvements to these findings require additional discussion.

Ideally, this research would have recruited equal numbers of participant types distributed across both geographic communities, including deck hands, skippers, vessel owners, quota owners, and support industry

representatives. This change would also have to account for difference in community size and availability of these participant types. Due to the use of a modified snowball participant recruitment technique, as well as constraints owing to the time at sea most crew require to make a living, deckhands were not equally represented. Additionally, recruitment was opportunistic and many participants had been recruited in past research done by the university, possibly influencing some responses.

This study was designed to investigate the diversity of fisheries represented by participants, including fleets categorized by gear, target species, vessel class, etc. The heterogeneous conglomeration of fisheries and techniques in data collection may neglect categories within the industry that offer greater or lesser barriers for youth entry. For example, research investigating the Pacific groundfish fishery distinguished graying as an emerging issue (Russell et al., 2014), while younger crab fishermen interviewed for this study neglected to see graying as an issue due to the physical demand of crab fishing and the perception of it being a “young man's fishery”. Future research should consider and document these differences in fishery and perceptions to provide a better understanding of the graying phenomenon.

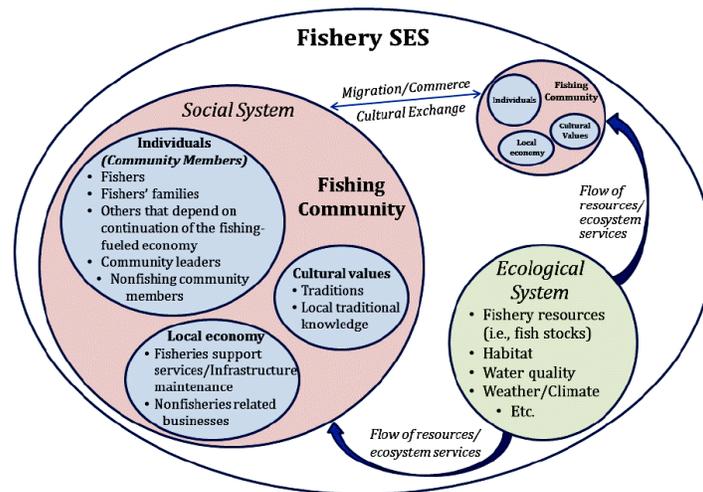
Limitations regarding research communities are also important to distinguish. Although Newport and Port Orford were specifically chosen based on community characteristics, results may not adequately reflect perceptions in other coastal communities due to diverse physical and cultural parameters of individual rural communities along the Oregon coast. Further investigation is necessary to determine perceptions of graying in other communities to best identify if graying is a coast-wide concern

In addition to limitations resulting from research methodology and practice, social comfort must also be taken into account. Participants often exhibited physical signs of discomfort during audio and video recording interviews,

primarily toward the start of the interview. Participants became more guarded in answering and discussing questions while being recorded and seemed to feel much more open to share opinions when only audio was being recorded. This may be due to an inherent discomfort and distrust of researchers within the fishing industry. Such resistance may stem from the perception that fishermen are often excluded from management discussions and/or that shared information would be used against the better interests of the fishing industry.

Management Considerations

This study presents opportunities for future research and management informed by it to be more inclusive of the human dimension of fisheries, shifting from the assumption of independent natural systems to embrace a more dynamic and interconnected structure, or described more holistically, as a social-ecological system (SES) (Figure 3.1) (Hall-Arber, Pomeroy, & Conway, 2009; Himes-Cornell & Hoelting, 2015; Lyons et al., 2016). The human dimension, more widely, refers to human social behaviors involving resource use (S. M. Calhoun, 2015). Interest in the human dimension of fisheries is growing in abundance and is apparent in a wide-body of fisheries literature (S. Calhoun et al., 2016; S. M. Calhoun, 2015; Clay & Olson, 2008; Hall-Arber et al., 2009; Johnson et al., 2014; Lester et al., 2010; Norman & Holland, 2012; Olson, 2011; Pollnac et al., 2006; Pomeroy et al., 2015; Ringer, 2016; Sharp & Lach, 2003; Tuler et al., 2008). The implementation of National Standard 8 (MSA) shows additional support for human dimension incorporation from NOAA and NWFS, both national fisheries regulating bodies.



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Figure 3.1- Nested systems within a fishery social ecological system showing the complexity and connections between marine resources and human dimensions.

A disconnect is apparent between language written in policy and the implementation of said language. Current management still places greater precedence on quantitative data, often neglecting qualitative research and obstructing goals of more adaptive and holistic management regimes such as ecosystem-based management (EBM) (McLeod & Leslie, 2012). Inclusion of social science and qualitative data should not diminish the importance of quantitative data, but offer the necessary information to make it more robust (Olson, 2011).

The implementation of rationalization created a focus on neoliberal ideas targeting efficiency. This management method uses the ideology that less users harvesting fisheries become both easier to manage, and creates a sense of stewardship among harvesters. Importantly, the impacts of this efficiency driven ideology must also account for the negative consequences that are connected (S. M. Calhoun, 2015; Pinkerton & Davis, 2015; Pomeroy et al., 2015; Ringer, 2016).

A main topic of concern voiced by fishermen during interviews included explicit inequities being felt by them and their families as a result of privatization measures in fisheries management. Past research has sufficiently framed neoliberal privatization mechanisms and the commodification of fisheries as a logical and essential method for avoiding fisheries collapse (Foley, Mather, & Neis, 2015; Hersoug, 2005; Mansfield, 2011), often referencing an issue termed the “tragedy of the commons” (Hardin, 1968). This alludes to a disproportionate number of fishers in relation to the quantity of resources, directly leading to overexploitation (Longo, Clausen, & Clark, 2015). Although privatization has shown an ability to consolidate fishing pressure and maximize profit, it’s proponents regularly fail to consider negative social impacts on fishermen, families, and coastal communities (Pinkerton & Davis, 2015; Ringer, 2016).

More recently, social science literature has investigated the linkage of privatization management methods with ecological benefits and determined that many of these proposed ecological improvement arguments are unsupported. Meanwhile, tremendous social complications in fisheries-dependent communities are being documented (Carothers, 2010; Carothers & Chambers, 2012; Donkersloot, 2016). This study supports findings that call into question privatization measures, issues of inequity, and disproportionate impacts on rural and smaller scale coastal communities (S. Calhoun et al., 2016; Carothers, 2010, 2011; Himes-Cornell & Hoelting, 2015; Jacobsen, 2013; Ringer, 2016; Van Der Voo, 2013).

Restructuring of current management to better address inequity is crucial for the continuation of the unique livelihood and heritage which drives the daily life on the Oregon coast. By triangulating data from this research with community profile information and quota ownership data, well-being measures and vulnerability indices may be expanded upon within NOAA’s Integrated Ecosystem Assessment program (Norman & Holland, 2012). This expansion past the inclusive use of economic data will allow managers to better understand

the social ramifications of policies, and consider them in the design of future policies.

Furthermore, this study does not advocate for a removal of privatization measures in Oregon, but concurs that rights-based management “should have a central place in the fisheries management toolbox” (Hilborn, Parrish, & Litle, 2005, p. 191). However, lessons can be learned from both domestic and international fisheries with more mature privatization management.

Consideration should include programs which have shown greater success in combating negative social impacts such as owner-on-board programs and active participant requirements (Fina, 2011; Ringer, 2016). Pacific Northwest catch share programs are adolescent and require adjustments to resolve recognized issues stemming from their relatively recent implementation. These modifications should aim to better support small, rural communities and remove policies favoring large-scale companies over smaller local and family operations.

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APPENDICES

APPENDIX A. NOAA Consent Form

TO BE COMPLETED BY THE PERSON BEING INTERVIEWED

I, _____, am a participant in the Voices from the West Coast Project (hereinafter “VFWC”) of the National Oceanic and Atmospheric Administration’s National Marine Fisheries Service, Northwest Fisheries Science Center (NOAA/NMFS/NWFSC), and inclusive of collaborators at the NMFS West Coast Regional Office (WRO), Oregon State University (OSU), Warrenton High Fisheries Inc. (WarHF), and the Newport Fishermen’s Wives (NFW). I understand that the purpose of the VFWC is to collect audio- and video-recorded oral histories of the United States of America and its territories’ commercial, recreational, and subsistence fishermen and women, and those who support them, other community members engaged and with knowledge of environmental issues in their communities such as climate change, wave energy and other issues, scientists, and environmental managers, as well as selected related documentary materials such as photographs for inclusion in the Voices from the Fisheries Database (hereinafter “VFF DB”). The VFF DB is housed on NOAA/NMFS servers and will be accessible to the public through a website. These oral histories and related materials serve as a record of the Nation’s commercial, recreational, and subsistence fisheries and as a scholarly and educational resource for NOAA and the general public.

I understand that NOAA/NMFS/NWFSC/WRO/OSU/WarHF/NFW plans to retain the product of my participation in the VFWC in digital form, including but not limited to my interview, presentation, video, photographs, statements, name, images or likeness, voice, and written materials (“My Collection”) as part of its permanent collections in the VFF Database.

I also understand that VFWC and its partners plan to retain the product of my participation for potential use in a public display(s) on website(s), community festival(s), possible museum(s), and for other outreach and educational materials.

I hereby grant to NOAA/NMFS/NMFS/WRO/OSU/WarHF/NFW of the physical property comprising My Collection. Additionally, I hereby grant to NOAA/NMFS/NWFSC/WRO/OSU/WarHF/NFW, at no cost, the perpetual, nonexclusive, transferable, worldwide right to use, reproduce, transmit, display, perform, prepare derivative works from, distribute, and authorize the redistribution of the materials in MY Collection in any medium. By giving this permission, I understand that I retain any copyright and related rights that I may hold.

I hereby release NOAA/NMFS/NWFSC/WRO/OSU/WarHF/NFW and their assignees and designees, from any and all claims and demands arising out of or in connection with the use of My Collection, including but not limited to any claims for copyright infringement, defamation, invasion of privacy; or right of publicity.

Should any part of My Collection be found to include materials that NOAA/NMFS/NWFSC/WRO/OSU/WarHF/NFW deems inappropriate for retention with the collection or for transfer to other collections, NOAA/NMFS/NWFSC/WRO/OSU/WarHF/NFW may dispose of such materials in accordance with its procedures for disposition of materials not needed for NOAA's collections.

I hereby state that I am of legal age and competent to sign this release. I agree that this release shall be binding on me, my legal representatives, heirs, and assigns. I have read this release form and am fully aware of its contents.

ACCEPTED AND AGREED

Signature _____

Date _____

month/day/year

Printed Name _____

Name of Interviewer (if applicable) _____

Participant (Interviewee) Relationship to Interviewer _____

APPENDIX B. – IRB Verbal Consent Card

Conway&Cramer: Using Oral Histories to Track Change

Purpose. We want to understand the intergenerational fishing family business, the presence or absence of the “graying of the fishing industry,” and any impact on community resiliency. You’ve been identified as a research subject based on your participation in VFWC.

Activities. We want to listen to your oral history, as shared through answering six broad questions, and compare your experience with the literature on this topic.

Time. The length of the oral history is up to you; they generally last anywhere from 30-90 minutes.

Risks. There are no possible risks and/or discomforts associated with being in the study.

Benefits. There are no direct benefits for participation; the benefit is that you get to share your stories and life histories on the VFWC website for the public to view.

Payment. You will not be paid for participation.

Confidentiality. The VFWC oral history recordings and transcripts will be made public upon uploading to the Voices from the Fisheries website. Participants have the right to choose anonymity or remove their associated oral history data from the record at any time, but this rarely happens; most tend to take great pride in their stories and their participation. If a participant refuses to have their oral history interview placed on the website, their confidentiality will be maintained by de-identifying data gathered (although there is a small chance that we could disclose information that might identify the participant).

Voluntariness. Your participation and consent are voluntary. There is no penalty for choosing not to participate or for leaving the study at any time. You are free to remain silent on any topic. You may choose to take part in the VFWC oral history project and not this research project.

Contact information. Flaxen Conway is the leader (541-737-1339; fconway@coas.oregonstate.edu) and Deanna Caracciolo and Courtney Flathers are the student researchers (631-702-3553, caraccid@oregonstate.edu; 541-260-4323, flatherc@oregonstate.edu) on this project. The IRB at OSU oversees all research (541-737-8008).

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APPENDIX C. – Semi-Structured Questions for Oral History Interview

1. What was your first job in fishing/fish processing/service?
 - a. What made you get into it? (family business, choice, necessity...)
 - b. How many years have you been in the industry and how have your jobs changed over the years?
2. Which fisheries have you worked in?
 - a. Best ones for you?
 - b. Worse ones for you?
3. What changes have you seen in the ocean, coast and/or fishing over time?
4. What role has your wife/husband played in your fishing-related business and how has this changed over time?
- 5. What role has your kid(s) played in your fishing-related business and how has this changed over time? (2000, 2010, and present)**
6. What does fishing mean to you?
 - a. What was the high and low of your career?
 - b. What brings you the most joy and the most grief in this industry?
 - c. What are your greatest hopes for fishing?

APPENDIX D. – Interview Template for Fishermen / Wives

What role has your kid(s) played in your fishing-related business and how has this changed over time? (2000, 2010, and present)

5a. Have you found yourself encouraging or discouraging your kid(s) to stay in the fishing-related business? Why? What are the benefits or costs of them staying in the industry?

5b. Thinking about young adults in general,

- What attracts these folks to the industry and how has this changed over the years? What are the 3 biggest motivators?
- Are there obstacles or barriers for young people to get into the industry?
 - If yes, what are the 3 biggest barriers?
 - Has this changed over the years?

5c. There are data that indicate that the average age of commercial fishermen is in the 50s. In your opinion, has this always been the case, or is the fleet “graying?”

- What do you see here in (PLACE) that agrees or disagrees with this?
- If graying is happening, what is or might be the impact of this in (PLACE)? How about in other coastal towns?
- What is or might be the impact on the fishing community over time?

5d. What would it be like for you if your family fishing business (OR THE ONE YOU WORK FOR) were sold?

- Would this have any impacts on the fishing community?
- Would this have an impact on (PLACE) or other coastal communities?
- What is the “tipping point”? In other words, what would happen in (PLACE) if most (or all) of the fishing family businesses were sold?

APPENDIX E. – Interview Template for Fishing Adult Kids or Young Adults that Fish

So, first we'd ask them the six questions above IF that is relevant, but then we'd go on to ask:

5a. What was it like to grow up in a fishing-related family business?

- What role(s) have you played and why?
- Has this changed over time? (2000, 2010, and present)
- In what ways was growing up in a fishing family similar or different to other family businesses in town?

AND/OR

5a. As a young adult currently involved in the fishing industry, can you please share your perspective on what attracts young people to the industry?

- What are the 3 biggest motivators?
- What obstacles, if any, are there for young people to get into the industry? What are the 3 biggest barriers? Has this changed over the years, and if so, how?

5b. Are most fishing family kids **or** young adult fishermen satisfied with their work in the commercial fishing industry? Why or why not?

5c. What are your key skills and abilities that help you do your tasks in the fishing related business?

- Are these skills transferable to other industries? If so, which ones?

5d. Please talk with me a little bit about the kinds of places you want to live and work?

- Do you want to stay here or move somewhere else?
- Where do you see yourself in 5-10 years?

5e. What would it be like for you if your family fishing business (OR THE ONE YOU WORK FOR) were sold?

- Would this have any impacts on the fishing community?
- Would this have an impact on (PLACE) or other coastal communities?
- Is there a "tipping point"? In other words, what would happen in (PLACE) if most (or all) of the fishing family businesses were sold?