# SUPPORTING STATEMENT

**U.S. Department of Commerce**

**National Oceanic & Atmospheric Administration**

**Pacific Coast Groundfish Fishery Rationalization Social Study**

**OMB Control No. 0648-0606**

# Abstract

This request is for extension of a currently approved information collection. The Pacific Coast Groundfish Trawl Fishery was rationalized in January 2011. After a long history of management actions such as limited entry programs, buyback programs, and season and gear restrictions, catch shares was the next management option (Warlick, Steiner, and Guildin 2018; PFMC and NMFS 2010, and Shaw and Conway 2007). While catch shares may have biological and economic benefits, literature has long documented extensive negative social and cultural impacts to related fishing communities ([Olson 2011](#_ENREF_17), [McCay 1995](#_ENREF_14), [Ecotrust 2004](#_ENREF_9), [Lowe and Carothers 2008](#_ENREF_12), [NRC 1999](#_ENREF_16), [Petursdottir and Palsson 1996](#_ENREF_18), [Carothers 2013](#_ENREF_4), [Russell et al. 2016](#_ENREF_26), [Carothers 2015](#_ENREF_5), [Russell, Van Oostenburg, and Vizek 2018](#_ENREF_29), [Pinkerton and Edwards 2009](#_ENREF_20)). This study collects information to identify those sociocultural impacts, both in the short and long term (PFMC and NMFS 2017). Community members are directly and voluntarily surveyed. Some impacts take years to be revealed, resulting in the need for ongoing monitoring. Other impacts such as ‘graying of the fleet’, crew impacts, changing women’s roles, and infrastructure changes have already been identified (Cramer et al 2018, PFMC and NMFS 2017, Steiner et al 2018, Calhoun et al 2016). Management has been directly informed of all these results, as well as the larger research community and the public. Additional impacts such as owner consolidation, processor access, and other potential impacts that have been identified in literature can only be identified in this fishery and under this management system by continued monitoring and admiration of this study (McCay 1995, NRC 1999, Lowe and Carothers 2008).

# Justification

1. **Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.**

The Northwest Fisheries Science Center (NWFSC) is requesting approval for a continued collection of information on social and cultural impacts to members of the fishing industry whom are involved in a rationalization program for the Pacific trawl groundfish and whiting fisheries.

The Pacific Fisheries Management Council (PFMC) per the Magnuson Stevens Fisheries Conservation and Management Act (reauthorized 2007) (MSA) P.I. 109-479, sec. 302.f, implemented a rationalization program for the Pacific trawl groundfish and whiting fisheries in January 2011. Changes in how fisheries are managed not only results in changes in stock assessments, stock abundance, and species recovery, but also results in dramatic social changes to the people and communities within the fishery.

Scientific literature extensively discusses the impacts rationalization programs have on fishing communities and fishermen ([Olson 2011](#_ENREF_17), [McCay 1995](#_ENREF_14), [Ecotrust 2004](#_ENREF_9), [Lowe and Carothers 2008](#_ENREF_12), [NRC 1999](#_ENREF_16), [Petursdottir and Palsson 1996](#_ENREF_18), [Carothers 2013](#_ENREF_4), [Russell et al. 2016](#_ENREF_26), [Carothers 2015](#_ENREF_5), [Russell, Van Oostenburg, and Vizek 2018](#_ENREF_29), [Pinkerton and Edwards 2009](#_ENREF_20)). Social and cultural changes to fishermen, processors, and other industry members, such as net suppliers, are probable and have been documented (Lowe and Carothers 2008, McCay 1995, Olson 2011). Rationalization results such as consolidation and increased efficiency have benefits to the catch, but may have consequences on the people involved in the fishery. The extent of the social and cultural changes is correlated to the specific characteristics of the fishery being rationalized. This research collects post-rationalization time series data. The Pacific Coast Groundfish Fishery Social Study (PCGFSS) will represent a continued data collection per the study’s design. It will allow for the comparison of newly collected data to previously collected data and the identification and measurement of social and cultural changes that are related to the rationalization of the fishery.

Ongoing data collection is warranted as the management of the fishery is ongoing, complex, and issues are evolving and changing. Continuing advances in technology to include electronic monitoring, recovery of specific species, and any outcomes from current litigation, all have the potential to continue to change the sociocultural impacts to the people and communities participating in this fishery. Monitoring how these changes impact communities provides information of how to take action to support sustainable resilient coastal communities. Understanding and supporting resilient coastal communities has become a priority at high levels within the National Marine Fisheries Service (NMFS).

In addition to understanding impacts within this fishery, the potential to gain more information for other fisheries managed by the Pacific Fisheries Management Council (PFMC) is high. It is known that many fishermen diversify their fishing activity across more than one fishery (Holland et al 2017, PFMC and NMFS 2017). This research effort will collect data to show the movement of individuals between different fisheries. Where appropriate, data obtained can then be applied to other fisheries, contributing further to the utility of this research. In the event future fisheries are considered for rationalization, this research effort has and may continue to inform future management.

Baseline data was collected prior to the management change. Continued data collection is critical to the ability to show how the fishery changes. Without the supplemental time series data, the previous data collections will be useful, but will limit the ability to show explicit and unique social changes in the system. This research will be most complete, and will provide the greatest amount of information about social and cultural characteristics of this fishery, if continued to be conducted over time.

To achieve these goals, baseline data was collected in the year prior to the implementation of the catch shares program. A second research effort collected data in 2012, the second year post-implementation, and a third round of data was collected in 2015/2016 approximately a year after quota shares were released for trading. While the initial data collections were related to the implementation and release of quota shares, the additional collections will move to a 5 year cycle based on the 2015/2016 data collection effort. The first 5 year data collection was hindered by Covid-19, and the resultant authorization for data collection is expiring. This request for an additional three-year approval would secure the time-series data collection for continued monitoring of social changes in this fishery. This will also allow for the identification of social changes as a result of continued changing management actions such as the testing of electronic monitoring as well as the recovery of multiple of the species, the continued heating of the ocean waters referred to as the “Blob”, correlated increased bio-toxins, that have all impacted fisheries, and impacts of Covid-19 ([Richerson and Holland 2017](#_ENREF_23), [Leising et al. 2015](#_ENREF_11), [Du et al. 2015](#_ENREF_8), [McCabe et al. 2016](#_ENREF_13), [Fisheries 2018](#_ENREF_10)). This will also provide the most complete continued reporting of social cultural data and impacts of any catch shares program managed by the National Marine Fisheries Service (NMFS). Continued annual reporting to the NMFS regional office staff and PMFC personnel will inform ongoing management actions and improve the best available science for use in management actions.

Additionally, specific topics of inquiry will be supported that have arisen as ‘areas of interest’ form the prior data collections. These include impacts on small vessel owners, the impacts of absentee owners on others in the industry, graying of the fleet, consolidation and infrastructure change, and changing women’s roles (PFMC and NMFS 2017). These are a few of the areas that have been noted for tracking in the future, along with the standard changes in fishing practices, changing demographics, difficulties with observer coverage, and underutilization (PFMC and NMFS 2017).

In the West Coast Groundfish Trawl Catch Share Program Five-year Review (2017), we utilized both PCGFSS data and PacFin data to determine increased impacts on small vessels in the catch share program. Costs including observer fees, were proportionally higher for smaller vessels than other vessel types participating in the fishery, making it difficult to make a profit; resulting in many individuals depending on non-groundfish fisheries for income ([Russell, Van Oostenburg, and Vizek 2018](#_ENREF_29), [PFMC and NMFS 2017](#_ENREF_19)). Ownership characteristics have been shown to change in this fishery due to the quota, and our research has indicated 50% and 47.3% of owners are absentee in 2012, 2016 respectively ([Russell, Van Oostenburg, and Vizek 2018](#_ENREF_29), [PFMC and NMFS 2017](#_ENREF_19)). This may be of concern and require further monitoring as many quota programs have owner on-board requirements or provisions in place to prohibit absentee ownership ([Buck 1995](#_ENREF_3)). Many concerns with absentee ownership include the leasing of quota resulting in its value increasing over time, making it too expensive for new entrants to purchase, as well as creating lease fees, to pay for those expensive quota negatively impacting captains and crew ([Pinkerton and Edwards 2009](#_ENREF_20), [Ringer et al. 2018](#_ENREF_24)). Absentee ownership in conjunction with the requirement to diversify quota in this system requires further monitoring. Graying of the fleet is a phenomena that is occurring in fisheries across the United States ([Carothers and Chambers 2012](#_ENREF_6), [Donkersloot and Carothers 2016](#_ENREF_7), [Shivlani et al. 2008](#_ENREF_31), [Singer and Holland 2007](#_ENREF_32), [Power, Norman, and Dupre 2014](#_ENREF_21), [Russell, Van Oostenburg, and Vizek 2018](#_ENREF_29), [PFMC and NMFS 2017](#_ENREF_19)). Concerns over lack of knowledge transfer, the difficulty in recruiting new crew, and a reduction in safety due to lower numbers of crew all deserve continued monitoring ([PFMC and NMFS 2017](#_ENREF_19), [Donkersloot and Carothers 2016](#_ENREF_7), [Russell, Van Oostenburg, and Vizek 2018](#_ENREF_29)).

This research will also support several legal requirements (see below for description), not only for this specific management change, but possibly for other fisheries that have similar legal requirements. Results will support legal requirements by illustrating the importance of the fishery to fishing communities, by taking the first step to identifying the social characteristics of the fishery, as well as initiating an understanding of the relationships between individuals in the industry. All these results will support various sections of the MSA, which requires an understanding of social data along with NEPA, new EEJ executive orders and other laws and regulations. This is a unique data collection which serves a purpose and has utility well beyond its goals, and it informs various PFMC and NMFS efforts.

**MSA**

The following sections of the MSA pertain specifically to the requirements needing social and cultural data. Data collected in this effort will support current and future requirements.

1. National Standard 4 §600.325 states:

*(a) Standard 4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be:*

*(1) Fair and equitable to all such fishermen.*

*(2) Reasonably calculated to promote conservation.*

*(3) Carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.*

2) Requirements for Limited Access Privileges Sec.303A. (c) (1) (C) states:

… *any limited access privilege program (LAPP) to harvest fish submitted by a Council or approved by the Secretary under this section shall promote:*

*… (iii)* ***social*** *and economic benefits.*

3) Sec. 303A (B) PARTICIPATION CRITERIA – *In developing participation criteria for eligible communities under this paragraph, a Council shall consider -*

*(i) traditional fishing or processing practices in, and dependence on, the fishery;*

*(ii) the* ***cultural and social framework*** *relevant to the fishery;*

*…(iv) the existence and severity of projected economic and* ***social impacts*** *associated with implementation of limited access privilege programs on harvesters, captains, crew, processors, and other businesses substantially dependent upon the fishery in the region or subregion;*

4) Sec. 404(a) refers to:

…..*acquire knowledge and information including statistics, on fishery conservation and management and on the economic and* ***social characteristics*** *of the fishery.*

The act clarifies this in Sec 404(c) (3) indicating

*Research on fisheries, including the* ***social, cultural****, and economic relationships among fishing vessel owners, crew, United States fish processors, associated shoreside labor, seafood markets and fishing communities.*

1. National Standard 8§600.345) states:

*Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.*

**NEPA**

The National Environmental Protection Act (NEPA) requires federal agencies to consider the interactions of natural and human environments, and the impacts on both systems of any changes due to governmental activities or policies. This consideration is to be done through the use of ‘…a systematic, interdisciplinary approach that will insure the integrated use of the natural and **social sciences**…in planning and decision-making which may have an impact on man’s environment;’ (NEPA Section 102 (2) (A)). Under NEPA, an Environmental Impact Statement (EIS) or Environmental Assessment (EA) is required to assess the impacts on the human environment of any federal activity. NEPA specifies that the term ‘human environment’ shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment’ [NEPA Section 102 (C)].

**Executive Order 12898**

The Executive Order 12898 of February 11, 1994 on Environmental Justice requires federal agencies to consider the impacts of any action on disadvantaged, at risk and minority populations. To evaluate these impacts, information about the vulnerability of certain stakeholders must be better understood. Indicators of vulnerability can include but are not limited to income, race/ethnicity, household structure, education levels and age. Although some general information related to this issue is available through census and other quantitative data, these sources do not disaggregate those individuals or groups that are affected by changes in marine resource management or the quality of the resource itself. Therefore, other types of data collection tools must be utilized to gather information related to this executive order.

**Regulatory Flexibility Act**

While this research is sociocultural in nature, it also works and collects data on small entities and meets the requirements of the Regulatory Flexibility Act as a result.

The Regulatory Flexibility Act requires federal agencies to prepare an initial and final regulatory flexibility analysis which ‘…shall describe the impact of the proposed rule on small entities…’… The initial regulatory flexibility analysis‘…shall also contain a description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities. [RegFlex Section 603 (b) (5) (c)]. In addition, each final regulatory flexibility analysis shall contain ‘…a description of the steps the agency has taken to minimize the significant economic impact on small entities….’ [RegFlex Section 604 (a) (5)].

**Executive Order 13985 – Environmental Justice**

This research is uniquely placed to support the EEJ requirements as we work in person in local communities. This gives us a unique lens to already know who in these communities likely fall into these underserved communities, and whom relationships may be established to achieve the requirements of this Executive Order.

Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

**Sec 7.** *Promoting Equitable Deliver of Government Benefits and Equitable Opportunities*. Government programs are designed to serve all eligible individuals. ….

… produce a plan for addressing:

1. Any barriers to full and equal participation in programs identified pursuant to section 5(a) of this order

**Sec 8.** *Engagement with Members of Underserved Communities*. In carrying out this order, agencies shall consult with members of communities that have been historically underrepresented in the Federal Government and underserved by, or subject to discrimination in, Federal policies and programs…

# Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.

# Information sought will be of practical use as NMFS social scientists will utilize the information for descriptive and analytical purposes. In addition, for current regulatory action and in the event of future regulatory action, the information may be utilized by NMFS to meet the requirements of the regulations described above in Question 1. The results of the research will also be available for use by the NMFS Regional Offices and the Pacific Fisheries Management Council, in their roles in fisheries management. In addition to direct fisheries management utility, this research and the resultant data may be utilized in future ecosystem management and community resilience efforts. These efforts include the development of various ecosystem models which incorporate various social indicators and other social information. The results of this research will increase the availability of social data to the extent that it may significantly benefit new research efforts in ecosystem modeling. Additionally, results may inform new research in the area of community resilience and the identification of communities that are highly vulnerable to change. Reports will also be available for public use to support other research concepts and future research design. The frequency of the use of the data is unknown at this time and is dependent in the regulatory actions required in the future as well as public use. With that said, as this type of data has been historically unavailable, and to date the current availability of this type of information has had high utility.

# The questionnaire is organized to ease the collection of the data and clearly identify the types of data being collected. The primary data collection tool is a questionnaire supplemented by interviews and short meetings with industry organizations as needed. The questionnaire is organized into various sections, which are pertinent to some or all of the intended respondents. The questionnaire includes the following sections: Demographic Information, Individual Participation, Connections, Catch-Shares Perspectives, Post Catch Shares – Quota Share Owner/Manager & Vessel Account Owner/Manager, Fishermen, and Processors (at-sea and Shoreside) and buyers/first receivers. There is a matrix in the questionnaire instructions which guides the study participant on how to complete the questionnaire and which sections to complete. These sections are further described as follows.

# *Demographic Information*: This data aims to obtain a better description of the unique population of this fishery. It will provide a more accurate description of the people within that population. Information collected in this section is comparable to U.S. Census information, but on a finer scale. The U.S. Census does not collect or provide the information at a level to be able to identify a specific population of fishermen, or fishermen as a separate industry. Information about fishermen in the census is aggregated with other types of information representing the agriculture and forestry fields. Additionally, this study collects data from related industry members such as fishermen’s wives, processors, crew, and ship builders, who are also not identified in the U.S. Census, and are not clearly identified in any databases. As a result, it is impossible to describe the demographics of any specific fishing community through the use of U.S. Census data. The collection of this data in this section serves the role to describe this specific population of the people connected to this specific fishery.

# *Individual Participation*: Data from this section increases our knowledge of the unique characteristics of the people in the industry beyond demographic information. Data gathered includes individual historical participation in the fishery, an understanding of family participation in the fishery, the roles individuals play in the fishery, characteristics of their jobs such as work schedules, and a better understanding of where they live versus where they work. Many of these areas may be affected by the management change. Work schedules, standard of living, etc., all may result in social impacts to individuals. The collection of this data will contribute to the identification of these impacts on a person by person basis.

# *Connections*: Data in this section will provide information on the connections, and insight into the relationships, between individuals in the fishery. Questions aim to identify clear components of the fishery such as important business suppliers and organizations that may be critical to the functioning of the fishery. Information in this section informs changes in infrastructure as well and distances many may have to travel to obtain services and support. Changes in the characteristics of the fishery as a result of the management change may alter the connections and relationships in the fishery. Scientific literature speaks to these changes (McCay 1995). Data in this section will serve multiple purposes, including insight into relationships as well as the ability to measure social change in the system.

# *Catch Shares Perspectives*: Questions in this section aim to gauge the opinions and perspectives of the individuals in the fishery about the management change. This section intended to clearly capture respondents’ concerns of the system, and their level of knowledge of the system. This information will serve multiple purposes. It will clearly identify industry members’ perspectives, allow for the clear measurement of the change of these perspectives over time, as well and provide a gauge of how well-informed individuals are about the management change – contributing to NMFS’ and PFMC’ efforts to improve communication to the public.

# *Quota Share Owner/Manager & Vessel Account Owner/Manger*: Questions in this section aim to understand the decisions allocation recipients made with the quota they received. Since allocations were very controversial in this particular fishery, the options to manage the allocations received are extensive. Therefore, the questions are designed to try and understand and determine common threads in actions taken by allocation recipients and how they manage their allocations over time. In addition, as this type of management system is expected to result in consolidation of the fishermen/fishery, questions in this section aim to track how that consolidation may have occurred. Questions in this section help inform issues such as absentee ownership, diversification, and new entrants as well.

# *Fishermen*: This section is designed specifically for those members of the fishery who are either directly or indirectly involved in, and have knowledge of, any aspect of the harvest of commercial catch. For example, vessel owners whom are not onboard, and permit owners, who are not on board as well as fishermen on board. Questions in this section aim to gather more information about fishermen and how they work in the industry. Information collected will help us understand the different fisheries individuals participate in; for example, the groundfish and the crab fisheries due to the gear that can be loaded on trawl vessels. Other information sought includes the common gears and gear combinations utilized, what factors contribute to their participation in a single fishery or multiple fisheries, where they fish in relation to where they live, how are they related to, and what are the relationships between, individuals with whom they fish, and how they are connected to processors and why. Data in this section will greatly contribute to our ability to understand where fishing communities are located and why, the characteristics of the fishery, the relationships between fishermen and processors, and a better understanding of the working system of the fishery.

# *Processors (At-sea and Shoreside) and Buyers/Receivers*: This section is specifically designed for those members of the fishery who receive and process the commercial harvest. Individuals targeted for this section of the survey include shoreside processors, at-sea processors, motherships, and buyers/first receivers. Questions in this section aim to gather information about a sector that is very data poor. Data gathered will help understand the distribution of processors on the west coast, how they obtain catch, their relationships with harvesters, the flow of commercial catch from the fisherman to the consumer, and how and where they market and distribute their product. Information obtained will allow for the understanding of various species that are processed, and the importance of each to the processing businesses. The measure of these characteristics both pre and post rationalization will create the opportunity to better understand the impact the catch shares program has on the processing sector.

# Together these questionnaire sections, supplemental interview data, and information from meetings with industry organizations will generate a very extensive description of the fishery. The description includes the perspectives of various aspects of the industry from fishermen to processors and other related entities. This research not only informs the current management process, but will overarch into other management issues, as well as support legal requirements about fishing communities, social impact assessments, and areas of research. This research also increases the utility and quality of other secondary research, completed and ongoing, by providing more accurate primary data to support secondary data collection efforts.

# It is anticipated that the information collected will be disseminated to the public or used to support publicly disseminated information. As explained in the preceding paragraphs, the information gathered has utility. NOAA NWFSC Human Dimensions Program will retain control over the information and safeguard it from improper access, modification, and destruction, consistent with NOAA standards for confidentiality, privacy, and electronic information. See response to Question 10 of this Supporting Statement for more information on confidentiality and privacy. The information collection is designed to yield data that meet all applicable information quality guidelines. Prior to dissemination, the information will be subject to quality control measures and pre-dissemination review pursuant to Section 515 of Public Law 106-554.

# The questionnaire and interviews are administered primarily in person to study participants, in the communities in which they live. Study researchers live and work close to the fishing communities in which they are assigned to research, therefore being able to spend large amounts of time in each community where our participants live and work. This is beneficial to reduce time burdens, and be flexible for study participants, scheduling flexible times for study participants. The questionnaire is also available to be emailed, downloaded electronically, dropped off and picked up, or dropped off and returned via a pre-paid envelope.

# This study targets anyone who plays any role or has any role in the trawl fishery. As a result, we target not only fishermen, vessel owners, processors, but crew, fishermen’s wives, net suppliers, dry docks, harbormasters, other suppliers, and any other individuals whom have a direct link to the trawl fishery. The above methods of data collection applies to all study participants.

# The data collection has been and will continue to be used by the PFMC for any reviews of the program. For example, prior data collections were used to inform the 5-year review (PFMC and NMFS 2017). Continued data collection will be used for the 10-year review of the catch shares program. Additionally, data from this project has been used for various management issues such as Yelloweye Amendments, and Climate and Communities Initiatives for the Ecosystem-Based Management Plan. Any new data will continue to be made available to the PFMC and NMFS regional offices for new EEJ efforts, ecosystem science modeling efforts, current Packard Foundation Groundfish Communities research underway at the Northwest Fisheries Science Center, and continued management actions. (See Table 1).

# The information has moved to a 5 year data collection. It is an ongoing data collection. It was initially a collection that was tied to the design elements of the catch shares program. All the design elements were triggered over the first five years of the program. As a result, we then altered the data collection to a standard 5 year collection cycle.

# Upon the complete analysis and processing of the new data, it will be combined with existing data. A website is currently being designed for the dissemination of the data to meet all requirements to distribute data to the public. All new data will be added to existing data on this website. It will be available in a manner which protects confidentiality and will be available for use by any individual interested in this research. Raw data will not be shared outside the Department of Commerce to protect the confidentiality of the data.

# Table 1: Information Requirements and Needs and Uses of Information Collected

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| --- | --- | --- | --- | --- |
| **Item #** | **Requirement** | **Statute** | **Regulation** | **Needs and Uses** |
| 1 | Catch Share Program Review | 316 U.S.C. 1853a | MSA §303A (i) (1) | Used by the PFMC for reviews and  management actions.   * Used by NMFS for management * actions. * Available for public comment and * use. |
| **Item #** | **Requirement** | **Statute** | **Regulation** | **Needs and Uses** |
| 2 | Advancing Racial Equity and Support for Underserved Communities through the Federal Government | EO 13985 | § 7 and 8 | * Used by PFMC to meet EEJ * requirements. * Used by NMFS to inform EEJ * efforts. * Available for public comment and * public use. |

1. **Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g. permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also, describe any consideration of using information technology to reduce burden.**

Data collection will be available in all forms possible. However, electronic in-person collection is not encouraged. The questionnaire, while rapid is lengthy; and often an electronic entry makes the study participant nervous. As a result, a paper copy is used. This is better for clarifying notes and the ease of the study participant who can see the questionnaire and review upon completion. Accessibility of the research tools to study participants is critical to the success of the research. A wide breadth of options will be available to distribute the questionnaire and capture the data. The primary data collection tool is a questionnaire. The secondary mode of data collection is unstructured and semi-structured interviews. Hard copy questionnaires will primarily be provided to research participant’s in-person. The questionnaire can then be administered by the researcher to facilitate the answering of any questions, the clarification of data being collected, and support any concerns of the research participant. In addition to administering the questionnaire in-person, the researcher can then conduct a brief unstructured or semi-structured interview to collect any other pertinent data from the study participant.

The questionnaire will also be available in hard copy to be mailed or otherwise distributed to research participants. The questionnaire will be available in a universal electronic format to either be electronically transmitted via email or downloaded from the study website by research participants. In the event of the dissemination of the questionnaire other than in person, directions to access the questionnaire and all support required to return the questionnaire to the researchers will be provided. For example, postage paid pre-addressed envelopes will be provided to those research participants who request a hard copy of the questionnaire, or arrangements may be made for researchers to pick up questionnaires that have been dropped off. All arrangements will be made at the request of the study participant.

1. **Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Question 2**

NOAA Fisheries social scientists and contractors work closely with regional academia, community based organizations, industry groups and other parties interested in this type of information. Reviews of existing information are common practice when initiating social science studies. A thorough and ongoing literature review identifies where similar studies have been initiated or are ongoing and ensure that efforts are not duplicated. The principal investigator has briefed and discussed this research to relevant NMFS personnel in headquarters and in relevant science centers, and regional offices on the West Coast, as well as social science colleagues in Oregon Sea Grant Programs, California Sea Grant Programs, academia, and the PFMC. The efforts of communication have served multiple functions to include making sure there will be no duplication of effort, to communicate plans for the research effort, and to establish collaborations to complete the research in the most effective manner possible.

A full literature review has also exhausted the knowledge of what information is currently available. As has been previously discussed, much of the information collected in this effort is not available via any existing source. This is routinely reviewed to make sure no new studies duplicate this effort.

1. **If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.**

This request includes the collection of data about/from individuals and those whom may be linked to or represent small businesses. Prior to contacting these respondents, researchers have gathered any publicly available answers to the questions. Only those questions that cannot be reliably answered through this manner and may change with perspective of the respondent will be asked.

In addition, participation in data collection will be voluntary. We will only target individuals within each small business whom have the largest breadth of knowledge, and have been working the longest, for example an owner, to represent the business, rather than an employee that may have just commenced working. This data collection will not require any reporting or equipment cost burdens. The burden will be limited to the time required to complete the questionnaire. Arrangements to collect data from all research participants will be at the convenience of the participant, and as flexible as possible to minimize burden on all parties.

1. **Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.**

A majority of the fisheries management requires the inclusion of social science information, fishing community information, or other human dimension data. The agency is far behind in meeting these requirements and can be subject to litigation as a result. In the absence of current information on the human dimensions of marine resource use and marine ecosystems, NOAA Fisheries and Regional Fisheries Councils will be unable to adequately understand and predict the potential impacts of policy decisions on fishing communities and people. This disproportionately affects those people who do not regularly attend public meetings, are located in remote communities, or spend a majority of their time at sea, but are nonetheless affected by the decisions. A study of this nature has utility well beyond the scope of its initial goals, and can inform many different management actions.

The federal mandates and executive orders, previously described require the analysis of the impacts that government actions have on the individuals and communities involved in fishing and marine resource related activities. Social impact assessments, analysis of the affected human environment, cumulative impacts as well as the distribution of impacts with a special emphasis on vulnerable or at risk communities are all examples of these requirements. The ability of NOAA social scientists to adequately respond to this charge, rests on access to timely and relevant information about the pertinent stakeholders.

A significant concern related to the quality of these analyses is the risk of being vulnerable to litigation due to the lack of fulfilling these mandates and executive orders. Therefore, not collecting this information may lead to incomplete representation of the science and information. Delays and costs due to litigation compound the issues both in the management context, and the funding context. This could impact the decision making process and negatively impact the communities subject to the decisions.

In the current and changing atmosphere of better understanding those underrepresented, studies such as these can go a long way to accurately describing these communities. This would result in the solid foundation for future research, without this and equivalent research, agencies will continue to be making decisions based on very little data and no information, meaning poor policies.

1. **Explain any special circumstances that would cause an information collection to be conducted in a manner inconsistent with OMB guidelines.**

This collection will be conducted in a manner that is consistent with OMB guidelines.

1. **If applicable, provide a copy and identify the date and page number of publications in the Federal Register of the agency's notice, required by 5 CFR 1320.8 (d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments. Specifically address comments received on cost and hour burden.**

A Federal Register Notice published on August 4, 2022 (Vol. 87 No 149, Page 47725-47726) solicited public comments. No comments were received.

Comments were sought from non-NOAA stakeholders; two responses were received:

**From:  Brad Pettinger,  Director of the Oregon Trawl Commission,  Brookings, OR**

"In consideration of the response burden, it depends on the person responding.  For some, the shorter the better.  For others, not so much.  Hopefully the participation will result in a benefit of such research to the fishery and management process.  Participants should consider this an investment of an individual’s time to secure a worthwhile change in the future of fisheries management."

**From:  Marit Aarvit, Owner, Windjammer Fish Northwest Inc, and Quota Share Permit Owner**

"The amount of time required (to participate) is a reasonable amount of time.  It is great to have input."

1. **Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.**

There are no plans to provide any payments or gifts to study participants. This is an ongoing study and no payments or gifts have ever been provided to study participants.

1. **Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy. If the collection requires a systems of records notice (SORN) or privacy impact assessment (PIA), those should be cited and described here.**

No PII information will be collected from individuals. Our main driver to protect confidentiality, is to protect the response of the individuals and keep them anonymous. As a result, we take all measures to keep all information not linked to a location, vessel, business, another person, or otherwise.

To support the confidentiality of this research, no participant names will be included on the questionnaire document. Participant names will be tracked in a separate document in order to 1) code participants for protection during data collection and analysis, 2) confirm receipt of a survey from each individual, 3) avoid of duplication of responses, 4) ensure the distribution of final reports back to research participants, and 5) track the individuals in the future for the post-rationalization impacts portion of the research.

Separate documents containing names will be kept in locked container such as a lock box in the field or a locked file cabinet in the office setting. All electronic versions will be kept under password or access restricted systems (servers and desktop units), accessible only by study researchers.

When writing final reports and publishing the findings of this research, individual responses will be combined with responses from other participants so that no single individual may be identified. This aggregation of the data will follow the rule of 3, where any less than three responses will not be reported to protect confidentiality. All personal names provided will be coded by the researchers with a descriptor such as ‘X Community Fisherman’ or assigned a code such as ‘A1’ as an identifier. The type of code that will be applied to each data set may vary based on the question or the analysis required of that question. Every method to protect the confidentiality of all responses will be applied in any and all contexts of this research.

In addition to the confidentiality protection measures, survey participants are provided the option to skip questions of concern and stop their participation of the questionnaire at any time with no consequence to themselves.

The information provided will be kept confidential to the extent possible per MSA Sec. 402(b) and the NOAA Administrative Order NAO 216-100, Protection of Confidential Fisheries Statistics. In addition, in the event of a Freedom of Information Act (FOIA) request, we will protect the confidentiality to the extent possible under the Exemption 4 of the FOIA.

1. **Provide additional justification for any questions of a sensitive nature, such as sexual behavior or attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be given to persons from whom the information is requested, and any steps to be taken to obtain their consent.**

There are a few different areas where issues of a potentially sensitive nature will be explored. These are listed and discussed below:

1. Relationship Information: Section questions inquire about the relationships between individuals in the fishery and the quality of those relationships. Scientific literature suggests that under a rationalized fishery the relationships between people change ([Apostle, McCay, and Mikalsen 2002](#_ENREF_2), [McCay 1995](#_ENREF_14)). In addition, the MSA requires knowledge of these relationships. Questions have been designed to access this information in a manner to protect the responses of the participants. In addition, questions of this nature have all been provided with options ‘*prefer not to answer*’ the question, in the event a study participant is uncomfortable. This data is important to show social changes in the fishery driven directly by the characteristics of the new management system.
2. Connectivity/Network Information: Section questions inquire about the connections between industry members. Who gets information from whom, who works with whom for what purposes. Scientific literature confirms rationalization of fisheries results in consolidation and the removal of some fishermen and related industries from the fishery. The collection of data on connectivity and networks will utilize the Social Network Analysis methodology to identify those networks and visually represent them. The ability to do so will provide the opportunity to study how a system may change when people within the system are removed or change. The flow of information about management may change, the flow of product in the industry, etc. may change. The ability to map these changes pre and post-rationalization will provide the ability to show how the fishery has changed and what impacts may result from those changes. Questions of this nature will be coded as described in the confidentiality question No. 10 of this document. In addition, questions of this nature have all been provided with options *‘Prefer not to answer’* the question, in the event a study participant is uncomfortable. This data is important to show social changes in the fishery driven directly by the characteristics of the new management system.
3. **Provide estimates of the hour burden of the collection of information.**

Slight variations in the numbers in this table compared to the previous approval are due to the new requirement for this renewal to use the wage costs and this formatted in-depth table. This resulted in a slight change in cost and number when broken down into so many categories. The effort, instrument, and overall burden has not changed from the prior renewal. The new tables and reporting requirements show more detailed information.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Information Collection** | **Type of Respondent (e.g., Occupational Title)** | **# of Respondents / Year (a)** | **Annual # of Responses / Respondent (b)** | **Total # of Annual Responses (c) = (a) x (b)** | **Burden Hrs / Response (d)** | **Total Annual Burden Hrs (e) = (c) x (d)** | **Hourly Wage Rate (for Type of Respondent) (f)\*** | **Total Annual Wage Burden Costs (g) = (e) x (f)** |
| Survey/Interview | Vessel Owner/  Quota Share Permit Holder | 42 | 1 | 42 | 1 hr. | 42 | $16.19 | $679.98 |
| Survey/Interview | Prior Permit Owners Only | 4 | 1 | 4 | 1 hr | 4 | $16.19 | $64.76 |
| Survey/Interview | Crew Estimate | 13 | 1 | 13 | 1 hr. | 13 | $16.19 | $210.47 |
| Survey/Interview | Shoreside Processor Owners | 9 | 1 | 9 | 1 | 9 | $29.88 | $268.93 |
| Survey/Interview | Shoreside Processor Employees | 5 | 1 | 5 | 1 | 5 | $16.19 | $80.95 |
| Survey/Interview | Industry Supply Owners/Employees | 6 | 1 | 6 | 1 | 6 | $29.88 | $179.28 |
| Survey/Interview | Misc. Fishermen/Processors | 12 | 1 | 12 | 1 | 12 | $16.19 | $194.28 |
| Survey/Interview | Observers | 10 | 1 | 10 | 1 | 10 | $49.00 | $490.00 |
| Survey/Interview | Fishery Related Organizations | 10 | 1 | 10 | 1 | 10 | $49.00 | $490.00 |
| Survey/Interview | Misc. Others (Fishermen’s Wives, etc.) | 12 | 1 | 12 | 1 | 12 | $29.88 | $358.66 |
| Interviews Only | Interviews Only | 16 | 1 | 16 | 30 min | 8 | $13.04 | $104.32 |
| Meetings | Meetings – Various Misc. | 3 | 1 | 3 | 1 | 3 | $10.83 | $32.49 |
| **Totals** |  |  |  | 142 |  | 134 |  | $3154.12 |

\*Wage costs were determined from the [US Bureau of Labor Statistics website](https://www.bls.gov/bls/blswage.htm), accessed 12/6/22. Categories used included Farming, Fishing, and Forestry Occupations 45-000, Buyers and Purchasing Agents 13-1020, Compliance Office 13-1041. National mean values were used as this study crosses multiple state lines.

1. **Provide an estimate for the total annual cost burden to respondents or record keepers resulting from the collection of information. (Do not include the cost of any hour burden already reflected on the burden worksheet).**

As this is an ongoing and established data collection, there are no capital/start-up or ongoing operation/maintenance costs associated with this information collection.

There are no capital costs or operating and maintenance costs associated with this information collection.

1. **Provide estimates of annualized cost to the Federal government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information.**

Total estimated annual cost to the federal government is $270,750 for 1 year of data collection (See Table 2). The survey will be conducted by NMFS federal staff, grantees, and students. In addition to these costs, travel costs will be incurred to various field sites, as well as printing and mailing of surveys. Data processing, and report development will be conducted by NMFS federal staff, grantees(s), and students in the Seattle, WA location. These estimated costs for the grantees(s) and students have been included below. Based on past experience, costs increase each year for grantees (including increases in overhead costs which are built in to estimates), travel costs, as well supply costs. Please see table below for itemized costs. For this reporting period supply costs are expected to be minimal as prior supplies are available for use.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cost Descriptions** | **Grade/Step** | **Loaded Salary /Cost** | **% of Effort** | **Fringe (if Applicable)** | **Total Cost to Government** |
| **Federal Oversight** | ZP-101-3 | $110,000 | 50% |  | $55,000 |
| Printing |  | $700 |  |  | $700 |
| Postage |  | $50 |  |  | $50 |
|  |  |  |  |  |  |
| **Contractor Cost** |  |  |  |  |  |
| PSMFC Grantees – 7 ea\* | N/A | $210,000 | 100% | N/A | $210,000 |
|  |  |  |  |  |  |
| **Travel** |  |  |  |  | $5000.00 |
| **Other Costs:** |  |  |  |  |  |
| **TOTAL** |  |  |  |  | $270,750 |

**\***NOAA affiliates that work on this project are Pacific States Marine Fisheries Commission grantees. Six to seven grantees are typically used for this research. Three in California, two in Oregon, and two in Seattle Washington. The field researchers in California and Oregon are part time, while the researchers in Seattle, Washington are full time and have larger roles in the study.

1. **Explain the reasons for any program changes or adjustments reported in ROCIS.**

There are only slight burden changes since the last renewal, to account for updated estimates of respondents.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Information Collection** | **Respondents** | | **Responses** | | **Burden Hours** | | **Reason for change or adjustment** |
| Current Renewal / Revision | Previous Renewal / Revision | Current Renewal / Revision | Previous Renewal / Revision | Current Renewal / Revision | Previous Renewal / Revision |
| Survey/Interview | 123 | 116 | 123 | 116 | 123 | 116 |  |
| Vessel Owner/  Quota Share Permit Holder | 42 |  | 42 |  | 42 |  |  |
| Prior Permit Owners Only | 4 |  | 4 |  | 4 |  |  |
| Crew Estimate | 13 |  | 13 |  | 13 |  |  |
| Shoreside Processor Owners | 9 |  | 9 |  | 9 |  |  |
| Shoreside Processor Employees | 5 |  | 5 |  | 5 |  |  |
| Industry Supply Owners/Employees | 6 |  | 6 |  | 6 |  |  |
| Misc. Fishermen/Processors | 12 |  | 12 |  | 12 |  |  |
| Observers | 10 |  | 10 |  | 10 |  |  |
| Fishery Related Organizations | 10 |  | 10 |  | 10 |  |  |
| Misc. Others (Fishermen’s Wives, etc.) | 12 |  | 12 |  | 12 |  |  |
| Interviews Only | 16 | 16.7 | 16 | 16.7 | 8 | 8 |  |
| Meetings – Various Misc. | 3 | 3.3 | 3 | 3.3 | 3 | 3 |  |
| **Total for Collection** | **142** | **136** | **142** | **136** | **134** | **127** |  |
| **Difference** | 6 | | 6 | | 7 | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Information Collection** | **Labor Costs** | | **Miscellaneous Costs** | | **Reason for change or adjustment** |
| Current | Previous | Current | Previous |
| Survey/Interview | $3,017.31 | $2,900 | 0 | 0 | Updated labor wage rates |
| Vessel Owner/  Quota Share Permit Holder | $679.98 |  | 0 | 0 |
| Prior Permit Owners Only | $64.76 |  | 0 | 0 |
| Crew Estimate | $210.47 |  | 0 | 0 |
| Shoreside Processor Owners | $268.93 |  | 0 | 0 |
| Shoreside Processor Employees | $80.95 |  | 0 | 0 |
| Industry Supply Owners/Employees | $179.28 |  | 0 | 0 |
| Misc. Fishermen/Processors | $194.28 |  | 0 | 0 |
| Observers | $490.00 |  | 0 | 0 |
| Fishery Related Organizations | $490.00 |  | 0 | 0 |
| Misc. Others (Fishermen’s Wives, etc.) | $358.66 |  | 0 | 0 |
| Interviews Only | $104.32 | $208.75 | 0 | 0 |
| Meetings – Various Misc. | $32.49 | $32.50 | 0 | 0 |
| **Total for Collection** | $3154.12 | **$3,141.25** | **0** | **0** |  |
| **Difference** | $12.87 | | 0 | |  |

1. **For collections of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions.**

Several publications have been produced for this study and will continue to be produced. The purpose of this research is to study impacts over time. As a result, upon the collection and conclusion of the data processing, analysis of the data will commence. Once analysis of a new data set is complete, comparative analysis across data sets will commence. Timing of such analysis will be dependent on PFMC and NMFS regional office requirements, and other priorities. All data will ultimately be made available on a web based platform in a confidentially safe format.

The most complete publications will be several NMFS technical memoranda, which will have the most comprehensive results. Each memorandum will be extensive, to include an update of the previous results, and a comparison between previous data collection efforts and the current data collection effort to measure and show any changes that have occurred in the system due specific characteristics of the management structure. These technical memoranda will be available in hard copy and CD formats, and will be posted on the Human Dimensions website, under publications. In addition, several journal publications have been produced and will continue to be produced, often in collaboration with other federal and academic partners. The exact number of publications and the journals where the results will be published are to be determined. The goal is to make sure the information is widely available for all those interested in the research.

Below are the currently list of publications in various states by year:

Vizek. A., M. Van Oostenburg, S. Russell. 2020. The Transition to Catch Shares Management

in the West Coast Groundfish Trawl Fishery: Changing Job Attitudes and Adjusting Fishing Participation Plans. Society and Natural Resources. 33:10; 1175-1193. [doi:https://doi.org/10.1080/08941920.2020.1777491](https://doi.org/10.1080/08941920.2020.1777491)

Steiner, E., S. Russell., A. Vizek, L. Pfeiffer, A. Warlick. 2018. Crew in the West Coast

Groundfish Catch Share Program: Changes in Compensation and Job Satisfaction. Coastal Management. 46:6, 656-676. <doi:https://10.1080/08920753.2018.1522495>.

Russell. S.M., A. Vizek, M. Van Oostenburg. In prep. The Pacific Coast Groundfish Fishery

Social Study: Part 1- A Multi-Year Analysis by Study Participant Role.

Program.U.S. Dept. Commer., NOAA Tech Memo. NMFS-NWFSC-10X.

Russell. S.M., A. Vizek, M. Van Oostenburg, B. Haugen, J. Whyte. In prep. The Pacific Coast

Groundfish Fishery Social Study: Part 2- A Multi-Year Analysis by Community.

Program.U.S. Dept. Commer., NOAA Tech Memo. NMFS-NWFSC-10X.

Russell, S.M**.**, M. Van Oostenburg, A. Vizek. 2018. Adapting to Catch Shares: Perspectives

of West Coast Groundfish Trawl Participants. Coastal Management. 46:6, 603-620,

<doi:https://10.1080/08920753.2018.15222491>.

Cramer, L.A., Flathers, D., D. Caracciolo, S. Russell, F. Conway, 2018. Graying of the Fleet:

Perceived Impacts on Coastal Resilience and Local Policy. Marine Policy, 96:27-35.

PFMC and NMFS. 2017. West Coast Groundfish Trawl Catch Share Program: Five-year

review. Approved by the Pacific Fishery Management Council November 16th 2017, Costa Mesa, CA.

Russell. S.M., A. Arias-Arthur, K. Sparks, A. Varney. 2016. West Coast Communities and

Catch Shares: The Early Years of Social Change. 2016. Coastal Management. 44(5), 1-11.

Calhoun. S., F. Conway, S. Russell.2016. Acknowledging the Voice of Women: Implications

for Fisheries Management and Policy. Marine Policy. 74. 292-299

1. **If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.**

The agency plans to display the expiration date for OMB approval of the information collection on all instruments and required documents.

1. **Explain each exception to the certification statement identified in “Certification for Paperwork Reduction Act Submissions."**

The agency certifies compliance with [5 CFR 1320.9](http://www.gpo.gov/fdsys/pkg/CFR-2014-title5-vol3/pdf/CFR-2014-title5-vol3-sec1320-9.pdf) and the related provisions of [5 CFR](http://www.gpo.gov/fdsys/pkg/CFR-2014-title5-vol3/pdf/CFR-2014-title5-vol3-sec1320-8.pdf) [1320.8(b)(3)](http://www.gpo.gov/fdsys/pkg/CFR-2014-title5-vol3/pdf/CFR-2014-title5-vol3-sec1320-8.pdf).

[**Cited References**

Apostle, Richard, Bonnie McCay, and Knut Mikalsen. 2002. *Enclosing the Commons: Individual Transferable Quotas in the Nova Scotia Fishery*. Memorial University of Newfoundland, St. John's Newfoundland: Institute of Social and Economic Research.

Buck, Eugene H. 1995. Indiidual Transferable Quotas in Fishery Management. National Council for Science and the Environment.

Calhoun. S., F. Conway, S. Russell.2016. Acknowledging the Voice of Women: Implications for Fisheries Management and Policy. Marine Policy. 74. 292-299.

Carothers, Courtney. 2013. "A survey of US halibut IFQ holders: Market participation, attitudes, and impacts." *Marine Policy* 38:515-522. doi: 10.1016/j.marpol.2012.08.007.

Carothers, Courtney. 2015. "Fisheries privatization, social transitions, and well-being in Kodiak, Alaska." *Marine Policy* 61:9. doi: <http://dx.doi.org/10.1016/j.marpol.2014.11.019>.

Carothers, Courtney, and Catherine Chambers. 2012. "Fisheries Privatization and the Remaking of Fishery Systems " *Environment and Society: Advances in Research* 3:20. doi: DOI: 10.3167/ares.2012.030104.

Cramer, L.A., D. Flathers, D. Caracciolo, S. Russell, Fl. Conway. 2018. Graying of the Fleet: Perceived Impacts on Coastal Resilience and Local Policy. *Marine Policy*, 96:27-35.

Donkersloot, Rachel, and Courtney Carothers. 2016. "The Graying of the Alaskan Fishing Fleet." *Environment: Science and Policy for Sustainable Development* 58 (3):30-42. doi: 10.1080/00139157.2016.1162011.

Du, Xiuning, William T Peterson, Jennifer Fisher, Matt Hunter, and Jay Peterson. 2015. "Initiation and Development of a Toxic and persisitent *Pseudo-nitzschia* Bloom off the Oreagon Coast in Spring/Summer 2015." *Plos ONE* 11 (10:e0163977). doi: :10.1371/journal.

Ecotrust, Ecotrust Canada and. 2004. Catch-22: Conservation, Communities and the Privitization of B.C. Fisheries. Vancouver, B.C. : Ecotrust.

Fisheries, NOAA. 2018. New Fishing Opportunities Emerge from Resurgence of West Coast Groundfish. In *NEWS*.

Holland, D., C. Speir, J. Agar, S. Crosson, G. DePiper, S. Kasperski, A. Kitts, and L. Perruso. 2017. Impact of catch shares on diversification of fishers' income and risk. PNAS, 144 (35): 9302-9307.

Leising, Andrew W, Isaac D Schroeder, Steven J Bograd, Jeffrey Abell, Reginaldo Durazo, Gilberto Gaxiolo-Castro, Eric P Bjorkstedt, John Field, Keith Sakuma, Roxanne R Robertson, Ralf Goericke, William T Peterson, Richard D Brodeur, Caren Barcelo, Elizabeth A Daly, Toby D Auth, Robert M Suryan, Amanda J Gladics, Jessica M Porquez, Sam McClatchie, Edward D Weber, William Watson, Jarrod A Santora, Willaim J Sydeman, Sharon R Melin, Francisco P Chaves, Richard T Golightly, Stephanie R Schneider, Jennifer Fisher, Cheryl Morgan, Russell Bradley, and Peter Warybok. 2015. State of California Current 2014-15: Impacts of the Warm-Water "BLOB".

Lowe, Marie E., and Courtney Carothers. 2008. *Enclosing the Fisheries: People, Places, and Power*. Edited by Marie E. Lowe and Courtney Carothers, *Symposium 68*. Bethesda, MD: American Fisheries Society.

McCabe, Ryan M, Barbara M Hickey, Raphael Kudela, Kathi A Lefebvre, Nicolaus G Adams, Brian D Bill, Frances M D Gulland, Richard E Thomson, William P Cochlan, and Vera L Trainer. 2016. "An Unprecedented Coastwide Toxic Algal Bloom linked to Anomalous Ocean Conditions." *Geophysical Research Letters* 43 (10):10.366-10,376. doi: 10.1002/ 2016GL070023.

McCay, Bonnie. 1995. "Social and Ecological Implications of ITQ's: An Overview." *Ocean & Coastal Management* 28 (1-3):3-22.

Mcnemar, Q. 1949. *Psychological statistics*. New York: John Wiley and sons.

NRC, National Research Council. 1999. *Sharing the Fish: Toward a National Policy on Indiviudal Fishing Quotas.* . Washington D.C. : National Academy Press.

Olson, J. 2011. "Understanding and contextualizing social impacts from the privatization of fisheries: An overview." *Ocean & Coastal Management* 54 (5):353-363. doi: DOI 10.1016/j.ocecoaman.2011.02.002.

Petursdottir, Gudrun, and Gisli Palsson. 1996. *Social Implications of Quota Systems in Fisheries*. Copenhagen: Nordic Council of Ministers.

PFMC, Pacific Fisheries Management Council, and National Marine Fisheries Service NMFS. 2017. West Coast Groundfish Trawl Catch Share Program Five Year Review. Costa Mesa, CA.

Pinkerton, Evelyn, and Danielle N. Edwards. 2009. "The Elephant in the Room: The Hidden Costs of Leasing Individual Transferable Fishing Quotas." *Marine Policy* 33 (4):707-713.

Power, Nicole G, Moss E Norman, and Kathryne Dupre. 2014. ""the fishery went away": the impacts of long-term fishery closures on young people's expereince and perception of fisheries employment in Newfoundland coastal communities." *Ecology and Society* 19 (3):6. doi: <http://dx.doi.org/10.5751/ES-06693-190306>.

Rea, Louis M., and Richard A. Parker. 1997. *Designing and Conducting Survey Research: A Comprehensive Guide*. Second Edition ed. San Francisco, CA: Jossey-Bass.

Richerson, Kate, and Dan S Holland. 2017. "Quantifying and predicting responses to a US West Coast Salmon fishery closure." *ICES Journal of Marine Science* 74 (9):2364-2378. doi: <https://doi.org/10.1093/icesjms/fsx093>.

Ringer, Danielle, Courtney Carothers, Rachel Donkersloot, Jesse Coleman, and Paula Cullenberg. 2018. "For generations to come? the privatization paradigm and shfting social baslines in Kodiak, Alaska's commercial fisheries." *Marine Policy* 98:97-103.

Robson, Colin. 2002. *Real World Research*. Second Edition ed. Malden, MA: Blackwell Publishing.

Russell, Suzanne M. , Albert Arias-Arthur, Kimberly Sparks, and Anna Varney. 2016. "West Coast Communities and Catch Shares: The Early Years of Social Change." *Coastal Management* In Press.

Russell, Suzanne M., Kimberly Sparks, Albert Arias-Arthur, and Anna Varney. 2014. The Pacific Groundfish Fishery Social Study: An Intial Theme Based Report. Seattle, WA: National Marine Fisheries Service.

Russell, Suzanne, and Morgan Schneidler-Ruff. 2014. The U.S. Whale Watching Industry of Greater Puget Sound: A Description and Baseline Analysis. edited by U.S. Department of Commerce. Seattle, WA: NOAA.

Russell, Suzanne, Max Van Oostenburg, and Ashley Vizek. 2018. "Adapting to Catch Shares: Perspectives of West Coast trawl participants. ." *Coastal Management* In press.

Sheldon, M R, M J Fillyaw, and W D Thomson. 1996. "The use and intepretation of teh Fiedman test in teh analysis of ordinal-scale data in repeated measures designs." *Physiotherapy Research International* 1 (4):221-228.

Shivlani, M, V R Leeworthy, T J Murray, D O Suman, and F Tonioli. 2008. Knowledge, Attitudes and Perceptions of Management Strategies and Regulations of the Florida Keys Natinal Marine Sanctuaries by Commercial fisherys, Dive Operators, and Environmental Group Members: A Baseline characrization and 10-year Compaison. edited by U.S. Department of Commerce. Silver Spring, MD: Marine Sanctuaries Conservation Series.

Singer, Laura T, and Dan Holland. 2007. A Socioeconomic Study of the New England Lobster Industry. edited by Gulf of Maine Research Institute. Portland, Maine.

Steiner, E., S. Russell., A. Vizek, L. Pfeiffer, A. Warlick. 2018. Crew in the West Coast

Groundfish Catch Share Program: Changes in Compensation and Job Satisfaction. *Coastal*

*Management*. 46:6, 656-676. [doi:https://10.1080/08920753.2018.1522495](https://doi.org/10.1080/08920753.2018.1522495).

**Additional References**

Adesoji, A, J. Menzo, and B. McCay. 1998. “Market Power, Industrial Organization and

Tradeable Quotas” *Review of Industrial Organization* 13: 589-601.Dewees, C.M. 1998. “Effects of Individual Quota Systems on New Zealand and British

Columbia Fisheries.” *Ecological Applications* 8 (1) Supplement: Ecosystem Management for Sustainable Marine Fisheries (Feb., 1998), S133-S138.

Government Accountability Office. 2004. *Individual Fishing Quotas: Methods for Community*

*Protection and New Entry Require Periodic Evaluation.* GAO-04-277.

Huppert, D. 2005. “An Overview of Fishing Rights” *Reviews in Fish Biology and Fisheries*

15:201-215.Pew Oceans Commission. 2003. *Socioeconomic Perspectives on Marine Fisheries in the United States.* Pew Oceans Commission, Arlington, VA.