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West Coast Communities and Catch Shares: The Early Years of Social Change

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ABSTRACT

The Pacific Coast Groundfish Trawl Fishery transitioned to a catch shares program in January 2011. The Pacific Coast Groundfish Fishery Social Study was designed to measure associated social changes and impacts on individuals and communities. Selected survey and interview data from the baseline data collection in 2010 and the first supplemental data collection effort in 2012 are aggregated at the community level and analyzed for initial signs of social change.

Communities are sorted into top-, mid-, and low-tier communities based on the percentage of quota share (QS) permit owners that live in each community. A higher number of QS permit owners in a place is expected to result in relatively greater benefits to those communities. Questions analyzed include percent of income from fishing, multiple jobs worked, job stability, job satisfaction, standard of living, and how individuals were personally affected. Significant results for TOP-tier communities include increases in working multiple jobs, which may be negative or positive depending on the respondent, and improvements in job satisfaction. LOW-tier communities indicate significant improvements in standard of living. MID-tier communities appear to be in the middle, with no significant changes. Interview data indicate variation between owners, where some can fish their allocations and others need to lease more to fish.

KEYWORDS


catch shares; fishing communities; Pacific Coast Groundfish Trawl Fishery; quota systems; social impacts

Introduction

Catch share programs can change fishing communities and the livelihoods of the people who live in fishing communities. They allocate exclusive shares of fish to individuals, groups of fishermen, or communities.¹ Catch share programs can support a diversity of fishery management objectives including reducing bycatch, rebuilding overfished species, increasing economic efficiency, improving safety, and strengthening conservation ethics (Carothers 2013; Costello, Gaines, and Lyman 2008; Grimm et al. 2012; NRC 1999a). Individual fishermen who are allocated catch privileges may benefit from improved flexibility in fishing schedules,

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longer seasons, and higher profits (Copes and Charles 2004; Grimm et al. 2012; Olson 2011). Others without initial allocations, such as crew and more recent entrants to the fishery, may not accrue such benefits. In addition, crew may suffer reduced compensation if they are required to bear some of the quota lease costs (Apostle, McCay, and Mikalsen 2002; McCay 1995; Olson 2011). This may affect social relationships between crew and owners (Apostle et al. 2002; McCay 1995; McCay et al. 1995).

Fishing communities also change due to catch shares systems. Consolidation is an expected outcome of catch share programs, which may benefit some communities and harm others (Karlsdottir 2008; McCay and Brandt 2001; Yandle and Dewees 2008). As the number of vessels in a fishery decreases, ports where quota owners and processors concentrate their operations and infrastructure are likely to strengthen and stabilize (Copes and Charles 2004; Karlsdottir 2008). Other communities may lose boats, employment opportunities, infrastructure, and may see a reduction in fishing effort such that they are no longer connected to the fishery (Copes 1996; Copes and Charles 2004; Karlsdottir 2008; Wingard 2000). In programs where efforts have not been made to protect communities in the form of community quotas or geographic restrictions on trading, concentration of infrastructure typically occurs in large communities, with losses of infrastructure occurring in smaller communities (Copes and Charles 2004; Olson 2011).

In January 2011, a catch shares program was initiated for the Pacific Coast Groundfish Trawl Fishery on the West Coast of the United States. The fishery extends approximately from Blaine, WA, to San Diego, CA (PFMC and NMFS 2010). Within this program, quota shares (Qs) are allocated to individuals rather than communities. While initial allocations benefit initial QS recipients, how initial allocations are managed (e.g., whether quota is retained and used inside the community or sold or leased outside the community) affects communities (Ecotrust 2007, 2011; Pinkerton and Edwards 2009).

In this paper, we asked if “Communities with larger numbers of QS permit owners see greater benefits or success from the catch shares program?” We assessed the degree to which individuals and communities are impacted by the catch shares program by examining changes in percent income from fishing, job satisfaction, job stability, standard of living, if participants worked multiple jobs, as well as “how they were personally affected” (Carothers 2013; McCay and Brandt 2001; Pollnac et al. 2006).

Methods and data

The results reported herein are part of an ongoing multi-year study. Data were collected via a single survey instrument and semi-structured interviews in 2010 prior to implementation and again in 2012, one year after the program was in place (Bernard 2002; Schensul, Schensul, and LeCompte 1999). The majority of surveys and interviews were conducted in person. The scope included anyone connected to the Pacific Coast groundfish fishery, from Blaine, WA, to Morro Bay, CA, independent of their role—fishermen, vessel owners, vessel operators, groundfish limited entry permit owners, QS allocation recipients/permit owners, crew, shoreside processors, fishermen’s wives, industry suppliers, observers, and other participants in the industry (see Figure 5 Appendix). The survey contains several sections including demographics, individual participation, connections (social networks), catch shares perspectives, fishermen, and

processors. In 2012, an additional section for QS allocation recipient was added (see Appendix for the 2012 Survey Instrument). For the baseline data collection period in 2010, participants were identified through the limited entry permits (LEP). In 2012, any new participants due to changes in QS allocations, or other reasons, that generated new QS permit owners were added to the contact lists. In both years, participants beyond those listed as LEP or QS permit owners were identified through snowball sampling (Bernard 2002; Robson 2002).

Additional QS permit data were used to determine permit owner location, which was verified by the authors.² Based on the percentage of QS permit owners (Figure 1), communities were sorted into three categories (Table 1): top communities (TOP), containing more than 10% of the total QS permit owners; middle communities (MID), having 5–10% of QS permit owners; and low communities (LOW), with less than 5% of QS permit owners.

We delineated fishing communities based on location, participation in a common fishery, and gear used (Gilden 1999; NRC 1999b).³ Data were aggregated to the community level (Table 2). Small communities located close to others were aggregated to protect the confidentiality of participants. In two cases (Westport, WA, and Bodega Bay, CA), response numbers for the communities were insufficient to protect the confidentiality of the participants. Therefore, both were withheld from the analysis. Percent income data were organized into quartiles, as were the responses of the proportion of survey respondents from each community with 0–25%, 26–50%, 51–75%, and 76–100% of income from commercial fisheries. We focus on the proportion of respondents with over 75% of income from commercial fishing as we feel this demonstrates a significant dependence on fishing for their livelihoods.

Interviews were transcribed and analyzed using a grounded theory approach and in vivo coding (Bernard 2000, 2002). This analysis generated themes directly from the words of the participants (Saldana 2009). Interview data collected often further clarified and extended our knowledge of the survey data collected.

Results

Despite some shifts between 2010 and 2012 in the proportion of respondents with over 75% of income derived from fisheries (Figure 6 Appendix), a test of proportions determined that these shifts were not statistically significant for communities aggregated within their tier levels, TOP ($p = 0.112$), MID ($p = 0.322$), and LOW ($p = 0.870$).

Seattle is the only TOP community with a decrease in the proportion of respondents working multiple jobs (–9.4%). The proportion of respondents working multiple jobs increased by a significant 50.4% in Coos Bay and 15.6% in Newport (see Table 3 Appendix) ($p = 0.010$).⁴ In contrast, there was no statistically significant change in those working multiple jobs between years in the MID ($p = 0.589$) and LOW ($p = 0.330$) communities. When participants were asked why they work multiple jobs, responses included:

“To make money to supplement fishing income.” (Monterey, CA Participant)

“Delivery schedules are so far apart; it keeps me from going insane.” (Brookings, OR Participant)

Participants were asked to rate job stability on a Likert scale from poor to excellent (Figure 7 Appendix).⁵ Again, despite some shifts in ratings, we were unable to statistically detect a

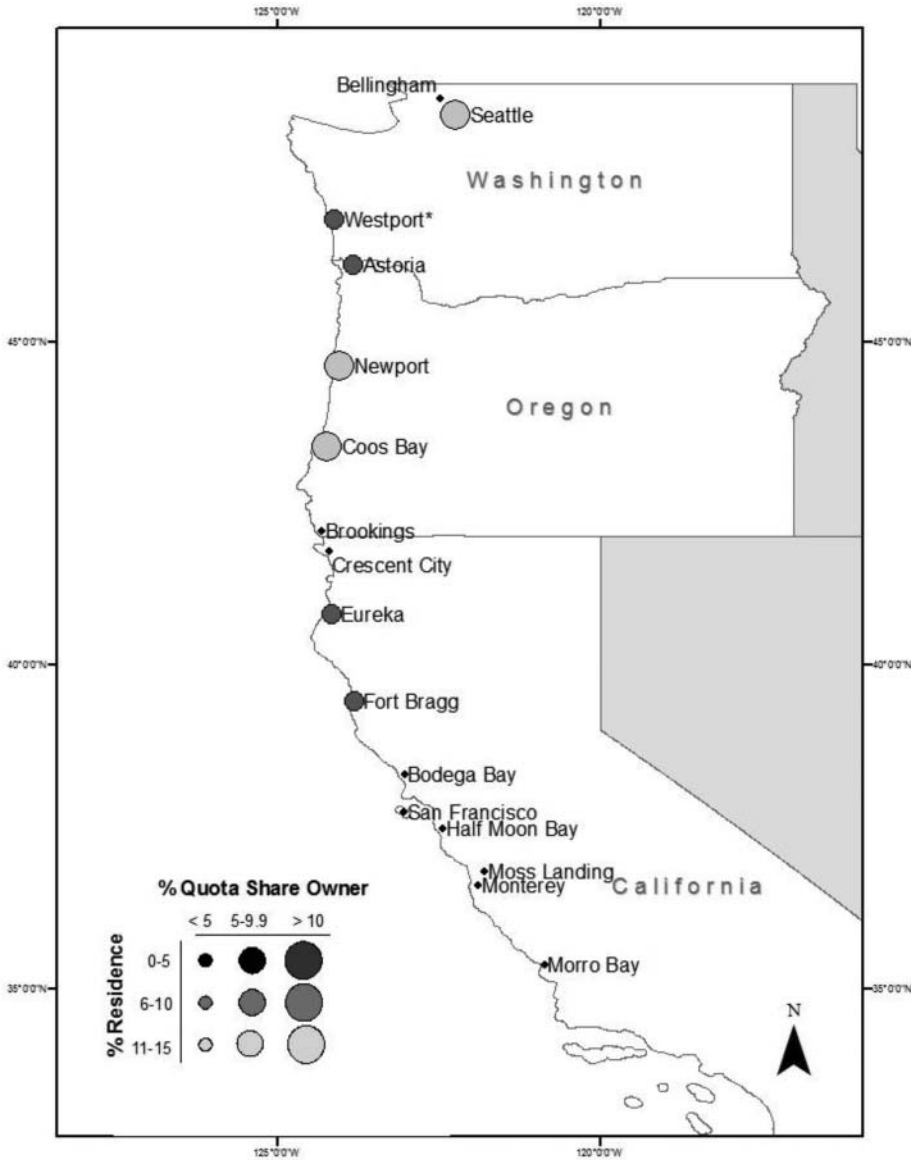


Figure 1. Map of the location of all QS permit owners and permanent residence. Note: 2012 data were used to have the same year for both QS permit and permanent resident data. There are no differences between 2011 and 2012 QS permit owner information that would affect the outcome of this analysis. *Westport is removed from the analysis to protect confidentiality.

change in perceptions of job stability for any of the community groups (TOP: $p = 0.095$, MID $p = 0.408$, and LOW $p = 0.157$). When we asked interviewees about job stability, responses such as the following were common:

“The dust hasn’t settled yet in this program, but for those of us who have made it this far, I think catch shares will bring some stability. I do think the future’s going to be better, but a lot of people had to go away for the last few of us to see a better future, and that’s sad.” (Monterey, CA Participant)

Table 1. Communities identified by the level based on the percentage of QS permit owners located in each community.

Level	Community	Percent QS permit owners (%)	Total by level (%)
TOP	Coos Bay, OR	19.4	47.4
	Newport, OR	16.5	
	Seattle, WA	11.5	
MID	SW WA*	9.4	28.8
	Astoria, OR	8.6	
	Eureka, CA	5.8	
	Fort Bragg, CA	5.0	
LOW	Half Moon Bay, CA	4.3	23.8
	Monterey, CA	2.9	
	Brookings, OR	2.9	
	Bellingham, WA	2.2	
	San Francisco, CA	1.4	
	Crescent City, CA	1.4	
	Morro Bay, CA	<1	
	Moss Landing, CA	<1	
	Other Misc.*	7.9	

Notes. 2012 permit owner data were used to align with 2012 survey data. QS permit owner data are not available prior to the catch shares program in 2010.

*Other removed from analysis due to varying geographic locations beyond West Coast states.

“I think it added more stability to the people that owned the fish and not necessarily the people that worked to catch the fish.” Newport, OR Participant

Participants were asked to rate levels of job satisfaction on a Likert scale from poor to excellent (Figure 2). In the TOP communities, a significant improvement was found ($U = 1758.5$, $z = -2.335$, $p = 0.020$). Results are not significantly different for the MID-tier ($p = 0.699$) or LOW-tier ($p = 0.180$) communities. Interview responses describing job satisfaction include:

“We enjoy being out there, that’s what we like to do. Feeding the nation.” (Astoria, OR Participant)

“I think most of fishermen view it as a lifestyle more than an occupation. You have to love what you are doing to be on the ocean. It’s a place that’s different. A lot of people can’t work there.” (Eureka, CA Participant)

When participants were asked to rate their standard of living on a Likert scale, no statistically significant response was observed in TOP or MID communities (Figure 3). In contrast, we did observe significant improvements in low communities ($U = 1232$, $z = -2.945$, $p = 0.003$). All LOW communities showed improvements; good ratings increased in five of seven communities, and excellent ratings increased in four of seven communities.

During the 2012 data collection effort, participants were asked “How were you personally affected by the catch shares program” (Figure 4). In the TOP tier, not all responses were positive. In particular, negative responses were high in Coos Bay, 66.7%. In the MID communities, Astoria was neutral with almost as many positive as negative responses. Negative responses were higher in Fort Bragg and Eureka. In the LOW tier, two communities had high negative ratings, two had high positive ratings, and one had the same rating for each of the three categories of positive, negative, and no significant change. Five LOW communities

Table 2. Representation of communities aggregated into final communities used in data analysis.

Community	State	Aggregated communities	2010 n surveys	2010 RR* (%)	2012 n surveys	2012 RR* (%)	2010 n Int.	2012 n Int.	
1	Bellingham	WA	Bellingham, Mont Vernon, Anacortes, Ferndale	4	50.0	10	83.3	6	6
2	Seattle	WA	Seattle, Edmonds, Mercer Island, Bainbridge Island, Kingston, Lynnwood, Auburn	14	60.9	16	66.7	6	11
3	Astoria	OR	Astoria, Warrenton, Naselle, Hammond, Knappa, Bay City	26	51.0	34	57.6	14	30
4	Newport	OR	Logsdon, Newport, Philomath, Seal Rock, Siletz, South Beach, Toledo, Waldport	28	58.3	31	51.7	16	25
5	Coos Bay	OR	North Bend, Bandon, Coos Bay, Lakeside, Allegany, Charleston	25	67.6	24	45.3	20	18
6	Brookings	OR	Brookings, Harbor, Smith River	9	69.2	7	53.8	5	4
7	Crescent City	CA	Crescent City	5	71.4	6	60.9	6	6
8	Eureka	CA	Eureka, McKinleyville, Blue Lake, Fortuna, Trinidad, Ferndale, Arcata	23	69.7	18	56.3	19	18
9	Fort Bragg	CA	Fort Bragg, Comptche, Orick	20	76.9	22	71.0	19	17
10	Half Moon Bay	CA	Half Moon Bay, El Granada, Montara, Moss Beach	14	63.6	9	42.9	14	11
11	San Francisco	CA	Alameda, Berkeley, Tiburon, San Francisco, San Jose	15	65.2	9	56.3	15	8
12	Moss Landing	CA	Santa Cruz, Moss Landing, Prunedale, Royal Oaks, Prunedale, Salinas, Castroville, San Juan Bautista	3	75.0	5	75.4	2	5
13	Monterey	CA	Seaside, Carmel, Pacific Grove, Monterey	8	88.9	3	42.9	6	7
14	Morro Bay	CA	Morro Bay, Arroyo Grande, San Luis Obispo, Cayucos, Templeton, Los Osos, Atascadero, Avila Beach	13	56.5	17	77.35	13	15
Total	All	All		194	Mean RR 65.2%	211	Mean RR 58.2%	161	181

Notes. The number of surveys, interviews, and response rates collected by community are shown. All data listed in the "Aggregated communities" column are represented by the community identified in the community column in all data analyses. *RR is the response rate within each community for each year. Int. is the number of interviews collected.

also showed some level of "no significant change." When asked to describe their responses, we gain more insight into the perceptions of participants:

"Gives us more flexibility to manage our business; better price for fish." (Newport, OR Participant)

"What I had equal access to in 2010 I now have to pay for. Allocated so little fish it's impossible to fish year round without spending \$50,000 or more before you even leave the dock." (Eureka, CA Participant)

"I'm one of the 'haves'-have enough quota to make it." (Bellingham, WA Participant)

"Hasn't helped. To catch quota have to go buy quota from other people." (Coos Bay, OR Participant)

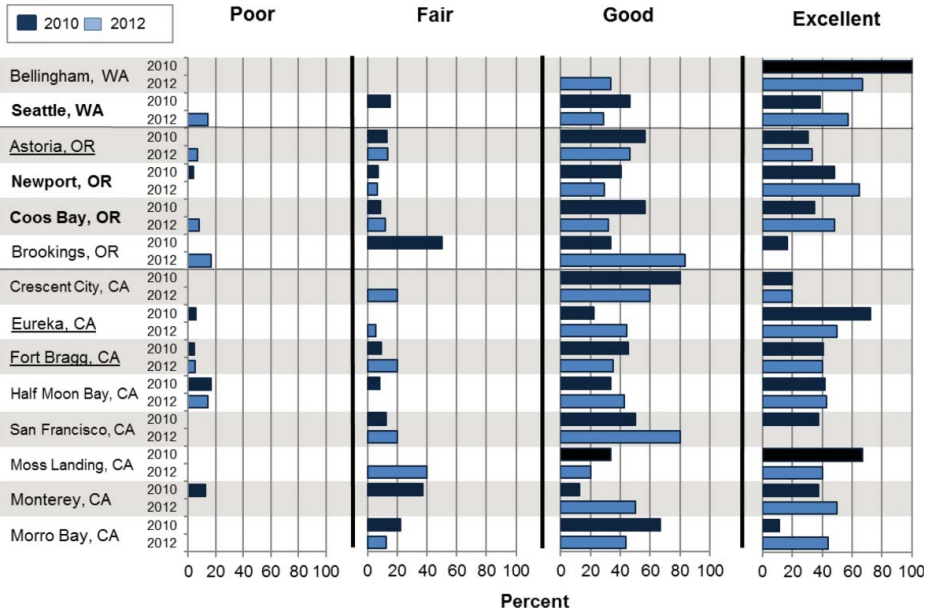


Figure 2. Likert scale response ratings for job satisfaction. TOP = bold, MID = underline.

Discussion

Our hypothesis was that communities with more QS permit owners are more likely to see greater benefits in a catch shares program. To test this, we analyzed several metrics including the percentage of income from commercial fishing, percentage of respondents working multiple jobs, job stability, job satisfaction, and “how they were personally affected” by the catch shares program. Improvements in these metrics over time would be consistent with benefits associated with the catch shares system. At this early stage, our results do not support this hypothesis—in general, we saw little change in the metrics we analyzed between 2010 and 2012.

TOP communities, however, did have improvements in job satisfaction and a significant increase in the number of multiple jobs worked. These metrics were complex as they were influenced by the subjective perspective of study participants (Smith and Clay 2010). Literature discusses job satisfaction as being influenced by more than income alone; where a fisherman’s experience of being at sea positively influences their job satisfaction, and changing or reducing their ability to go to sea will likely have the reverse effect (Anderson 1980; Pollnac et al. 2006; Smith and Clay 2010). Fishing effort and incomes in TOP communities may be reflective of this interpretation of job satisfaction, contributing to the improvement of the metric.

TOP participants indicated an increase in working multiple jobs. Interview data suggested that some participants work multiple jobs to supplement fishing income, which may also contribute a negative response in the form of increased fatigue and more time away from home. However, some individuals may have chosen to work alternate jobs to pursue other interests or spend more time at home developing relationships with family members (Binkley 1989; Smith and Clay 2010). Both of these metrics will benefit from further exploration.

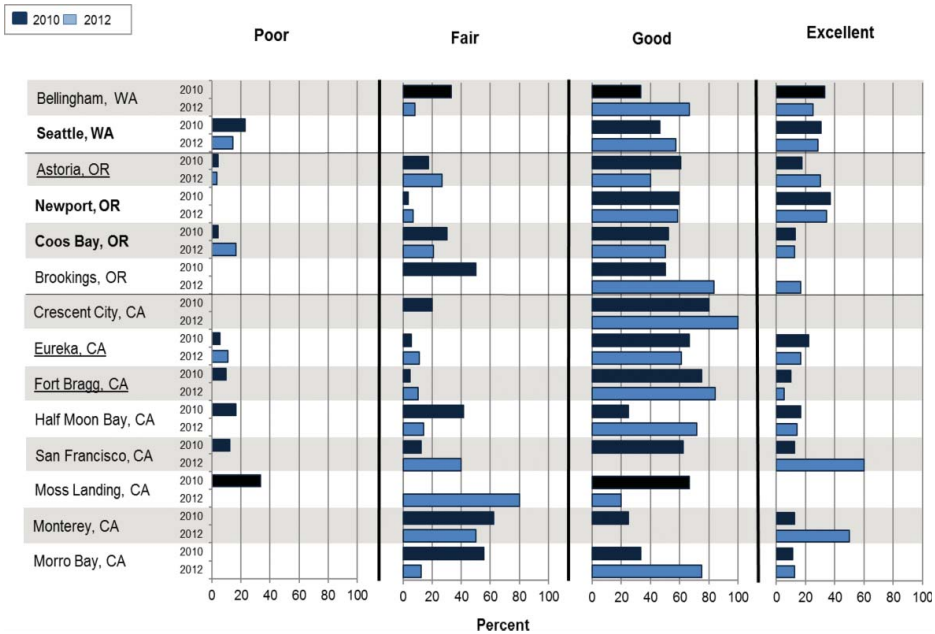


Figure 3. Likert scale response ratings for standard of living. TOP = bold; MID = underline.

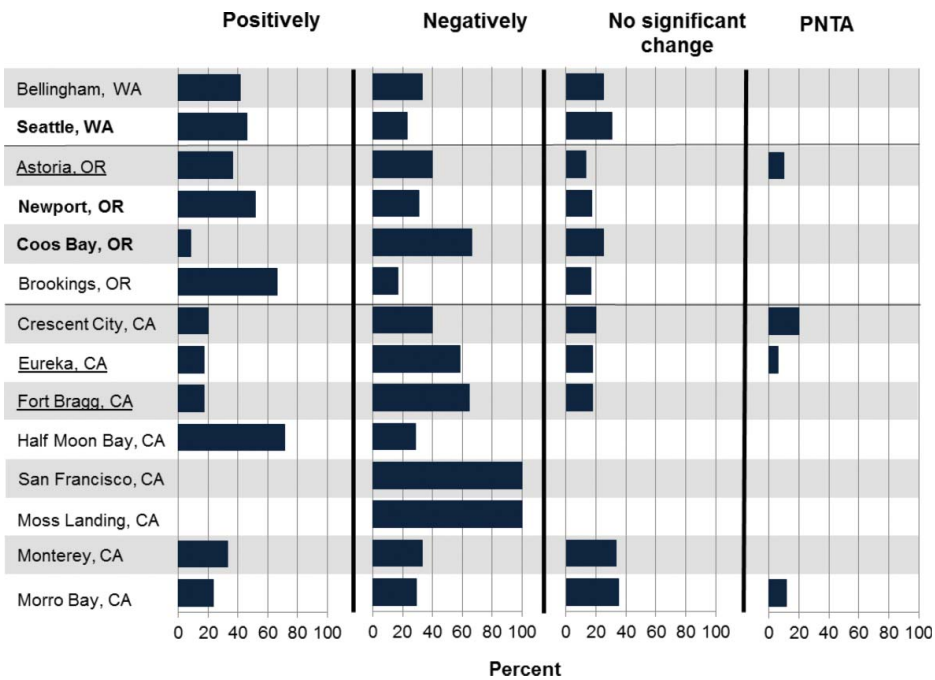


Figure 4. 2012 survey responses to “How were you personally affected by the catch shares program.” PNTA = prefer not to answer.

LOW communities had a significant improvement in the standard of living metric. As no other well-being metric presented as significant for LOW communities, this result may represent the number and breadth of perspectives in multiple LOW communities. Some participants may not agree with other well-being metrics but are able to sustain their standard of living sufficiently enough to generate a positive response.

Some complexities that were not accounted for in this paper include risk pools, initial allocations, and processor relations. “Risk pools” have been developed to help lessen the pressure of bycatch species and the associated financial risk (Holland and Jannot 2012; PFMC and NMFS 2010). Differential access to these risk pools may result in benefits in some communities where they are present. Allocated species were immediately usable (fishable) for some and caused additional leasing activity and costs for others (Russell et al. 2014). Holland and Norman (2015) indicated that when transfers happened between states, more quota pounds (QPs) moved out of California and into Oregon, a possible indication of consolidation. Alternate species and markets also contributed to success. Shrimp, crab, tuna, and other fisheries had good years, offsetting reduced groundfish incomes (Anonymous 2014; Russell et al. 2014). Processor relationships may also be a factor, where the relationships they develop with harvesters may either foster more stability for some fishermen or result in movement of fishermen between processors (Russell et al. 2014). These are just a few of the additional factors that may influence if people or communities may succeed or fail within this catch shares system. This is a first look at a new program that is still changing. Reporting the social changes allows us to see how fishermen adapt, which can inform how the program may succeed.

Conclusion

Catch shares systems change how people fish and how the related industry functions. With only a single year sampling before and after the initiation of the West Coast groundfish catch share program, it is unlikely to rigorously determine the impact of the program. At this point, we have seen little evidence of significant shifts in key social metrics. However, as the program persists and evolves, additional data collection and broader data analysis will be crucial and pursued. Fishermen have historically exhibited flexibility and ingenuity in the face of changing management systems. As this catch share program matures, it will be important to understand how it has affected the fish, fishermen, and fishing communities.

Notes

1. National Oceanic and Atmospheric Administration’s Catch Share Policy defines the term “catch share” as “a general term for several fishery management strategies that allocate a specific portion of the total allowable catch to individuals, cooperative, communities, or other entities....”
2. http://www.westcoast.fisheries.noaa.gov/fisheries/groundfish_catch_shares/quota_share_permit_s_accounts.html, accessed 4/2/2015. A caveat to this information is the level of accuracy of address information provided for permits may be variable and may represent business locations and not permanent residence. However, it is the closest measure of QS location for comparative purposes available.

3. Gilden (1999) defines a community of place as “geographic areas where people live,” and community of interest to be: “based on the common interests of their members. For example, fishing communities reside within larger communities of interest and place.” NRC (1999b) further describes the community of interest as a narrowly defined group of fishers who share a common interest in a particular management regime and are granted some exclusivity with respect to the resource.”
4. These tests were performed using a Pearson chi-square.
5. Likert ratings were consistently numerically coded for statistical tests where poor = 1, fair = 2, good = 3, and excellent = 4. Mann Whitney *U* tests were run for all Likert scale questions.

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References

- Anderson, L. G. 1980. Necessary components of economic surplus in fisheries economics. *Canadian Journal of Fisheries and Aquatic Sciences* 37:858–870.
- Anonymous. Interview by Suzanne Russell. Voices from the West Coast. Voices from the Fisheries, NOAA. 29 September 2014.
- Apostle, R., B. McCay, and K. Mikalsen. 2002. *Enclosing the commons: Individual transferable quotas in the nova scotia fishery*. St. John’s, NL: Institute of Social and Economic Research, Memorial University of Newfoundland.
- Bernard, H. R. 2000. *Social research methods: Qualitative and quantitative approaches*. Thousand Oaks, CA: Sage Publications.
- Bernard, H. R. 2002. *Research methods in anthropology*. 3rd ed. Walnut Creek, CA: AltaMira Press.
- Binkley, M. 1989. Nova scotian offshore groundfish fishermen: Effects of the enterprise allocation and the drive for quality. *Marine Policy* 13 (4):274–284.
- Carothers, C. 2013. A survey of US halibut IFQ holders: Market participation, attitudes, and impacts. *Marine Policy* 38:515–522.
- Copes, P. 1996. Social impacts of fisheries management regimes based on individual quotas. In *Social implications of quota systems in fisheries*, eds. G. Palsson, and G. Petursdottir. Copenhagen: Nordic Council.
- Copes, P., and A. Charles. 2004. Socioeconomics of individual transferable quotas and community based fishery management. *Agricultural and Resource Economics Review* 33 (2):171–181.
- Costello, C., S. D. Gaines, and J. Lyman. 2008. Can catch shares prevent fisheries collapse? *Science* 321:1678–1681.
- Ecotrust. 2007. *Market design for limited access privilege programs in us fisheries*. Ecotrust Working Paper Series. Portland, OR: Ecotrust.
- Ecotrust. 2011. Report of the National Panel on the Community Dimensions of Fisheries Catch Share Programs. Community Dimensions of Catch Share Programs: Integrating Economy, Equity, and Environment. Portland, Oregon.

- Gilden, J., ed. 1999. Sustainability and Community: An Overview. In *Oregon's changing coastal fishing communities*. ed. S. Ridlington. Corvallis, OR: Oregon Sea Grant.
- Grimm, D., I. Barkhorn, D. Festa, K. Bonzon, J. Boomhower, V. Hovland, and J. Blau. 2012. Assessing catch shares' effects evidence from Federal United States and associated British Columbian fisheries. *Marine Policy* 36 (3):644–657.
- Holland, D., and J. E. Jannot. 2012. Bycatch risk pools for the US West coast groundfish fishery. *Ecological Economics* 78:132–147.
- Holland, D., and K. Norman. 2015. *The anatomy of a multispecies individual fishing quota (IFQ) "market" in development*. Seattle, WA: National Marine Fisheries Service.
- Karlsdottir, A. 2008. Not sure about the shore! Transformation effects of individual transferable quotas on iceland's fishing economy and communities. In *Enclosing the fisheries: People, places, and power*. eds. M. E. Lowe, and C. Carothers. Bethesda, MD: American Fisheries Society.
- McCay, B. 1995. Social and ecological implications of ITQ's: An overview. *Ocean and Coastal Management* 28 (1–3):3–22.
- McCay, B. J., and S. Brandt. 2001. Changes in fleet capacity and ownership of harvesting rights in the United States surf clam and ocean quahog fishery. In *Case studies on the effects of transferable fishing rights on fleet capacity and concentration of quota ownership*. ed. R. Shotton. Rome: FAO.
- McCay, B. J., C. F. Creed, A. C. Finlayson, R. Apostle, and K. Mikalsen. 1995. Individual transferable quotas (IFQs) in Canadian and US fisheries. *Ocean and Coastal Management* 28 (1–3):85–115.
- NRC (National Research Council). 1999a. *Sharing the fish: Toward a national policy on individual fishing quotas*. Washington, DC: National Academy Press.
- NRC (National Research Council). 1999b. *Sustaining marine fisheries*. Washington, DC: National Academy Press.
- Olson, J. 2011. Understanding and contextualizing social impacts from the privatization of fisheries: An overview. *Ocean and Coastal Management* 54 (5):353–363.
- PFMC (Pacific Fishery Management Council) and NMFS (National Marine Fisheries Service). 2010. *Rationalization of the pacific coast groundfish limited entry trawl fishery; final environmental impact statement including regulatory impact review and initial regulatory flexibility analysis*. Portland, OR: Pacific Fishery Management Council.
- Pinkerton, E., and D. N. Edwards. 2009. The elephant in the room: The hidden costs of leasing individual transferable fishing quotas. *Marine Policy* 33:707–713.
- Pollnac, R. B., S. Abbott-Jamieson, C. Smith, M. L. Miller, P. M. Clay, and B. Oles. 2006. Toward a model for fisheries social impact assessment. *Marine Fisheries Review* 68 (1–4):1–18.
- Robson, C. 2012. *Real world research*. 2nd ed. Malden, MA: Blackwell Publishing.
- Russell, S. M., K. Sparks, A. Arias-Arthur, and A. Varney. 2014. *The pacific groundfish fishery social study: An initial theme based report*. Seattle, WA: National Marine Fisheries Service.
- Saldana, J. 2009. *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage Publications Inc.
- Schensul, S. L., J. J. Schensul, and M. D. LeCompte. 1999. *Essential ethnographic methods; observations, interviews, and questionnaires*. Vol. 2 of *Ethnographer's ToolKit*. Lanham, MD: AltaMira Press.
- Smith, C. L., and P. M. Clay. 2010. Measuring subjective and objective well-being: Analyses from five marine commercial fisheries. *Human Organization* 69 (2):158–168.
- Wingard, J. D. 2000. Community transferable quotas: Internalizing externalities and minimizing social impacts of fisheries management. *Human Organization* 59 (1):48–57.
- Yandle, T., and C. M. Dewees. 2008. Consolidation in an individual transferable quota regime: Lessons from New Zealand, 1986–1999. *Environmental Management* 41 (6):915–928.